Developing the Multimodal Language of Emotions of Low SES Primary Students

Research Report

Prepared for Industry Partners by Professor Kathy Mills,
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ACU INSTITUTE FOR LEARNING SCIENCES & TEACHER EDUCATION

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List of Abbreviations

ACARA	Australian Curriculum, Assessment and Reporting Authority ACELA Australian Curriculum English Language (strand)
ARC	Australian Research Council
CI	Chief Investigator
DoE	Department of Education, Queensland Government HDRs Higher Degree Research students
PI	Partner Investigator
RA	Research Assistant

Executive Summary

Students from disadvantaged backgrounds need to develop the multimodal language resources to express emotion for social and economic success, and research shows that teachers want to be equipped to teach these requirements of the Australian Curriculum. This project aimed to develop innovative education programs to broaden the range of meaning-making resources for students to communicate attitudinal meanings—emotion, judgement, and appreciation—across modes (e.g., speech, writing, image) and media.

In so doing it strengthened students' language skills for attitudinal expressions and wellbeing leading to recommendations applicable to teachers and students statewide. Such innovation was facilitated through multi-institutional collaboration with three schools in South-East Queensland over four years. This collaboration united a consortium of schools with visual media experts and policy makers to test new pedagogical approaches. The findings have implications to inform curriculum policies to strengthen students' attitudinal expressions through multimodality, and for guiding research innovation through collaborative partnerships.

Research Questions

This research aimed to develop new approaches for strengthening attitudinal language of emotion, judgement, and appreciation across multiple modes and media, for students of low socioeconomic status. The project aimed to understand students' attitudinal language learning across these modes and media through the appraisal framework in English, while extending knowledge of appraisal to specific forms of multimodal communication (Martin & White, 2005). The project addressed two important research areas:

1. Approaches that enable teachers to develop the grammar of emotion, judgement, and appreciation across different modes and media with students;

2. How students can demonstrate growth in the application of multimodal grammar knowledge for representing emotion, judgement, and appreciation.

Emotion, judgement, and appreciation are becoming a major focus of literacy research nationally and internationally (Mills, Unsworth, Bellocchi, Park, & Ritchie, 2014). Young people who develop the ability to understand and express emotions and judgements in multimodal ways are more likely to experience long-term social, academic, and behavioural success than those who do not develop these

Research Methods and Procedures

The project was an ARC funded longitudinal study over four years in primary schools (LP150100030, 2016–2019). Ethics approval was obtained from the Australian Catholic University Human Ethics Committee (HREC 2017 88T) and the Department of Education, Queensland Government (DoE).

All research participants gave their voluntary, informed, and written consent to participate. The first phase of this project involved building collaborative relationships with industry partners (DoE, Big Picture Industries Inc, Flagstone State School, Marsden State School, and Yugumbir State School); conducting workshops and curriculum meetings with teachers and industry partners; and baseline data collection.

The second stage of the project involved the establishment of knowledge networks through teacher engagement and connectivity via social media; providing in-class support to teachers of the application of new knowledge to curriculum; and data collection. The final stage of the project involved coding and analysis of data and evaluating and reporting the research findings.

Research Participants

Students: 560 students, ages 8–11 years, from 20 primary classes in three Logan and Beaudesert schools received classroom programs delivered by industry experts in collaboration with teachers. Data were collected from 12 research classrooms (336 students) who engaged in the programs delivered by the in-class media artist. This engagement maximised the impact of the project for the schools.

Seven classes (296 students) from years 4–6 also engaged in programs from Big Picture Industries Inc, and the digital images created by students were collected from these activities.

Teachers: Teachers of the 12 classrooms. Larger numbers of teachers also engaged in professional development sessions for all primary staff in some of the schools, and for specific clusters of year levels in others (e.g., teachers of years 4–6), conducted by the research team. This project broadened the range on meaning-making resources for students to communicate attitudinal meanings through innovative approaches to teacher professional development and classroom intervention.

Teacher Professional Development

A series of over 20 school-based meetings between all named researchers on the project and the project teachers, year-level coordinators, heads of curriculum, deputy principals, and principals from 2016–2018 facilitated collaborative planning of units. These meetings were led by Professor Kathy Mills and attended by Professor Len Unsworth, Joshua Darrah, the media artist on the project, and by Mark Williamson, Big Picture Industries Inc. This was an in-kind time contribution of all university and school participants.

A research showcase held at Marsden State School in 2018 enabled all research partners to present project findings to other regional schools. This event was supported by the local branch of the Australian Literacy Educator's Association and the Institute for Learning Sciences and Teacher Education, ACU.

The research findings were presented at the annual DoE Research Showcase from 2016–2018. Research findings were disseminated widely to state and interstate participants across the higher education and schooling sectors.

Classroom Interventions

The researchers, Big Picture Industries Inc, and a professional media artist worked with the three schools to:

- Conduct over 20 curriculum planning meetings with the schools before, during and after the intervention phase: twice per term by the research team at each of the participatory schools, attended by teacher participants, other year-level teachers, heads of curriculum, deputy principals, and principals;
- Deliver six school terms of in-class work, to 20 classes (560 students), including to some double classes at Marsden and Yugumbir State School. A series of up to eight lessons, 1.5 to 2 hours per classroom, was planned and delivered to each of three schools per term. The lessons were aligned with the content descriptors in the Australian Curriculum: English that require students to attend to the use of attitudinal meanings in texts (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2018).
- Implement 13 whole-day and whole-school professional development workshops to schools to address: (a) attitudinal grammar in multimodal texts, (b) digital media creation, and (c) pedagogy and curriculum design. The workshops were hosted for teachers and the workshop venue was rotated between the three schools in January and July of 2016 and 2017.

Data Collection and Data Analysis

1. The following five data sets, matched to research questions 1 and 2, were collected over two and a half years of the project in classrooms from January 2016–May 2018.

2. Student work samples: for example, digital comics, drawing animations, emojis, film trailers, posters, and letters. The data were interpreted through multimodal appraisal analysis: forms of communication such as gesture, facial expression, body movement, speech, writing, images, and sound.

3. Pre-tests and post-tests: tests were conducted for each unit of work in all years of the project. This data set was analysed through test scoring of students' responses.

4. Audio-recorded semi-structured student interviews: 111 students were interviewed over two years about the use of attitudinal language and their opinions and feedback of the learning experiences. This data set was analysed through thematic coding using NVivo 10. Attitudinal learning was interpreted through instances of students' use of multimodal grammar knowledge that were represented through forms of communication such as gesture, facial expression, body movement, speech, writing, images, and sound.

5. Audio-recorded semi-structured teacher interviews: (9 hours) were conducted over the two and half years of the project. The interviews collected data about the value of the enacted units on the growth of students' knowledge and teacher observations of student application of multimodal grammar for representing emotion, judgement, and appreciation. Teacher interview data were analysed through thematic coding using NVivo 10.

6. Teacher blogs used with the 2016 cohort within the Learning Place site by DoE.

Key Findings

F1. Students enhanced their abilities to communicate various grammars of attitudinal meanings multimodally as speech, writing, image, gesture, and sound, applying knowledge of the appraisal framework across these modes.

F2. Students expanded their vocabulary for expressing emotion, judgement, and appreciation through self-authored texts, such as digital comics, drawing animations, film trailers, posters, and letters.

F3. The teaching of the appraisal framework offered students a system of multimodal resources to apply and express knowledge of grammars of attitudinal meanings more clearly in self-authored texts.

F4. Teachers developed knowledge and confidence to use the appraisal framework to inform pedagogy to enhance students' repertoire of multimodal resources for expressing attitudinal meanings in self-authored texts.

Recommendations for Classroom Practice

Teachers are encouraged to use a range of modes (gesture, facial expression, body movement, speech, writing, image, and sound) to yield strong student language growth.

RCP1. Teachers are encouraged to use multiple media including film, dramatisations, popular animations, digital comics, posters, and letters to teach emotional expressions, and to model and develop high-quality strategies for attitudinal language.

RCP2. Teachers can explore new ways to enhance children's academic achievement and emotional wellbeing through the multimodal communication of emotion, judgement, and appreciation across other digital media platforms such as film design, virtual reality, and video games.

RCP3. Teachers can use guided instruction in digital design and explicit teaching of attitudinal language by experts outside of schools.

Recommendations for Whole-School Approach

RWSA1. Schools can develop novel pedagogical approaches for teachers to enhance students' abilities to express attitudinal meanings through multimodal resources in other areas, such as haptic, sonic, tactile, olfactory, and other senses.

RWSA2. Teachers, year-level coordinators, heads of curriculum, deputy principals, and principals are encouraged to address whole school planning to integrate dimensions of appraisal framework in English and literacy curriculum and pedagogy.

RWSA3. Teachers, year-level coordinators, and heads of curriculum are encouraged to extend assessment rubrics to include specific criteria to address attitudinal language in the students' multimodal writing.

Recommendations for Collaborative Partnership

RCP1. Long-term partnerships should be established with educational stakeholders to build community connections and collaboration, for example, with schools, visual media experts, universities, and policy makers, for enhanced student long-term social and emotional outcomes.

RCP2. Researchers, teachers, year-level coordinators, heads of curriculum, deputy principals, and principals are encouraged to use collaborative approaches with industry professionals and universities for professional development in the learning and teaching of appraisal framework through in-class support, modelled lessons, and curriculum planning meetings.

Recommendations for Policy Makers

RPM1. Education decision making bodies can apply the research findings to develop students' abilities to use the main categories of attitudinal meanings in language—emotion, judgement, and appreciation for better social and economic outcomes.

RPM2. Legislators of educational policies are encouraged to apply new pedagogical approaches outlined in this report to strengthen teachers' pedagogical practice to enhance students' demonstration of growth in the application of multimodal grammar knowledge for attitudinal meanings.

RPM3. Education decision making bodies are encouraged to address students' literacy needs through innovative pedagogical and collaborative approaches with researchers, universities, and industry and community partners.

Paragraph of keywords

Affect, appraisal framework, appreciation, attitude, communication, discourse, education, emotion, interpersonal language, judgement, literacy, media, modes, multimodal, semiotic resources, teaching, visual.

1. Research Background and Literature Review

This project is about the power of words, images, sounds, gestures, and body movements to effectively communicate attitudinal meanings.

Enabling students to express emotion, judgement, and appreciation is vital because these language skills are central to emotional wellbeing and positive behavioural and social outcomes (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Students need to be provided with a framework of evaluative meanings across modes and media that are necessary for academic success and social participation (Smithikrai, 2016). The project developed new approaches for building the grammar of attitudinal language of students, demonstrating that these strategies worked even for those from economically disadvantaged backgrounds, in order to enhance personal, emotional, academic, and social success.

The research also gave teachers new knowledge to build students' communication resources across modes (e.g., words, images, gestures) and media (e.g., film, animations, comics). This was crucial and timely because teaching the multimodal language of emotions is now a requirement of the Australian Curriculum (ACARA, 2018). The teachers sought to develop their understanding of the appraisal framework and its pedagogic application to primary school students. Through capacity building partnerships with community digital artists, schools, and state education policy-makers, the project empowered students to express emotion, judgement, and appreciation in a variety of text forms, modes, and media with positive outcomes.

The public schools were selected because they are in a major city of Australia with high multicultural diversity. The schools are in the most disadvantaged Statistical Local Areas of Queensland, the Greater Brisbane area and have double the proportion of Indigenous children when compared to the Australian population (Australian Bureau of Statistics, 2013). Twenty-four percent of students spoke a language other than English at home including: Samoan, Mandarin, Maori, Persian/Dari, Arabic, Filipino/Tagalog, Hindi, Spanish, Punjabi, Khmer, and Cantonese. The schools were classified as below the national average on the Index of Community Socio-Educational Advantage (ACARA, 2019). Prior to the project, the majority of students who participated in the project schools had limited repertoires of resources for expressing attitudinal meanings.

1.1

Project aims

The research aims were as follows:

- To develop new approaches for strengthening the students' attitudinal language across multiple modes and media;
- To document the students' attitudinal language across modes and media in response to Aim 1.

These aims responded to the needs identified through three industry partnerships:

- The Department of Education, Queensland Government;
- Big Picture Industries Inc, a local non-profit organisation specialising in delivering visual imagery skills to children and youth; and
- A consortium of urban public schools in Logan, Queensland: Flagstone State School,
- Marsden State School, and Yugumbir State School. The schools identified these aims as curriculum priorities.

1.2

Explaining key terms

The following are explanations of key terms used in the research questions and in the study.

Appreciation

Appreciation meanings attended to viewpoints about the value of things, processes, and natural phenomena, including appreciation of composition, when attention is focused on valuations of order and complexity.

Appraisal Framework

The appraisal framework by Martin and White (2005) focuses on positive and negative evaluative language of affect, judgement, and appreciation.

Affect

Feeling of emotions.

Attitude

Personal attitudes are opinions about shared emotion, judgement, and appreciation.

Judgement

Judgements include feelings about morals, ideologies, behaviours, social responsibility, and ethics.

Multimodal

The combination of two or more modes to communicate attitudinal meanings including speech, written text, image, and gesture.

Interpersonal Language

The interpersonal meanings in texts refer to how personal attitudes, such as shared emotions, judgements, and values, shape others' feelings.

2. Significance and Innovation

2.1

Why Strengthen the Multimodal Communication of Attitude of Students?

Emotion, judgement, and appreciation are becoming a major focus of adolescent and literacy research nationally and internationally. The importance of the language of emotions has been studied in contexts such as poetry writing, music, video compositions, photography, and films (see for example, van Leeuwen, 2017). Students who develop repertories for emotional expression through everyday multimodal literacy practices and across digital media are likely to be socially and academically successful long-term (Stornaiuolo, Hull, & Hall, 2017).

There is new research on the potentials to make meanings about judgements in literacy texts (see for example, Hejase & Tabch, 2012). For example, children may engage with the images and words in comics to broaden understanding about ethical issues such as provocation and relational aggression. Students who develop their abilities to understand and express judgements about ethical dilemmas and capability and morality of characters may demonstrate improved behavioural outcomes (see for example, White, 2013). Conversely, the incapacity to represent, understand, and articulate attitudinal meanings has been linked to many health problems and to poor social, emotional, and economic outcomes.

Prior to this study, multimodal research told us how attitudes are depicted in a range of print and digital texts. However, research did not tell us how to teach students from socially disadvantaged backgrounds the multimodal ways to express the grammars of emotion, judgement, and appreciation. Students need to be taught how to use sophisticated multimodal language for attitudinal meanings because life in a digital age requires frequent engagement in online environments— tweet, posts, videos, and blogs—to express attitudinal language (Paul & Dredze, 2011). Students need to develop knowledge and application of attitudinal language beyond the social media practice of clicking “emojis” or “likes” to signal emotion, judgement, and appreciation (Lee, 2018).

It is mandated that we understand and explicitly develop strategies by which students can receive continued support through the literacies of information and communication technology (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008). Student needs and goals are more likely to be met by minimising the constraints to personal, social, economic, and emotional success (UN Committee on the Rights of Persons with Disabilities, 2016).

2.1.1

Targeted a National Strategic Goal

This project targeted Australia's Strategic Goal to provide maximum social and economic opportunities to all people in society (Promoting Population Health and Wellbeing) to empower students (Australian Government, 2019; VicHealth, 2019). At this key life-stage, interventions can be instrumental to interrupting the cycle of socioeconomic disadvantage, marginalisation, and intergenerational inequality. The project generated a new pedagogical model that teachers can use to strengthen and develop students' language resources for contemporary communication and expression of attitudinal meanings in individual, cultural, technological, and community contexts.

This project aligned with the goals of the *Melbourne Declaration on Educational Goals for Young Australians* to enhance equitable and high-quality education that recognises novel ways of literacy learning through using information and communication technologies (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008). It supported students with opportunities to be informed, successful, creative, and active in their current and lifelong learning. This project also demonstrated how inequities in literacy education can be reduced for learners of English by developing resources for multimodal expression to achieve success in educational contexts, and to improve social outcomes long term.

2.1.2

Goal Aligned with Curriculum Requirement: English

The project was aligned with the Australian Curriculum: English requirement that addresses a strand of outcomes, taught from prep to year 10, called "Language for Interaction". Despite this recent national curriculum priority, previous research had not examined how to teach the multimodal language of emotion, judgement, and appreciation for powerful student expression.

The project provided teachers and principals with support to build pedagogical capacity to implement the National Curriculum: English (ACARA, 2018 [ACELA1429, ACELA1435]) requirement for students' expert creation of emotionally engaging texts and sophisticated multimodal expressions of ideas. The project developed students' abilities to speak, write, and communicate in digital and non-digital ways. Students learnt to recognise new ways that emotion, judgement, and appreciation are conveyed and influenced in expression (ACARA, 2018).

2.1.3

Addressed an International Goal in the Teaching Profession

The project's aims were internationally significant because they addressed an essential aim of the teaching profession worldwide—to teach multimodal literacy, including the grammar and visual representation of emotional expression (see for example, Hudson & Walmsley, 2005). While spoken and written systems of grammar are well established for determining attitudinal meanings, new teachers entering the profession often desire to expand their knowledge about language.

Teachers' grammatical knowledge and teaching of appraisal grammar are instrumental in enabling or constraining students' metalinguistic talk and abilities to identify and interpret attitudinal meanings in texts (O'Hallaron, Palincsar, & Schleppegrell, 2015). For example, prior to this research, the associated multimodal grammars that characterise digital media, such as film, needed to be more common knowledge among English teachers (Bartolo, 2017). Similarly, new research was needed to understand how students might use sophisticated systems of attitudinal meaning within the context of the English curriculum.

The appraisal framework was used to develop teachers' knowledge of the grammar of emotion, judgement, and appreciation (Mills, Unsworth, & Barton, 2019). Teachers in the study were taught attitudinal grammar through a series of over 20 professional development workshops and meetings. The teachers applied the new knowledge in programs and classroom teaching, and the research team modelled how to use attitudinal grammar. Students applied this language in self-authored texts. The appraisal framework is outlined in Figure 1.

The appraisal framework is a leading framework with a seminal systemic functional linguistic account of the language of evaluation in English. The appraisal system elaborates interpersonal metafunction (the construction of relationships) and has been adapted to inform literacy pedagogy and analyse multimodal resources such as images and written text (see for example, Humphrey, Droga, & Feez, 2012).

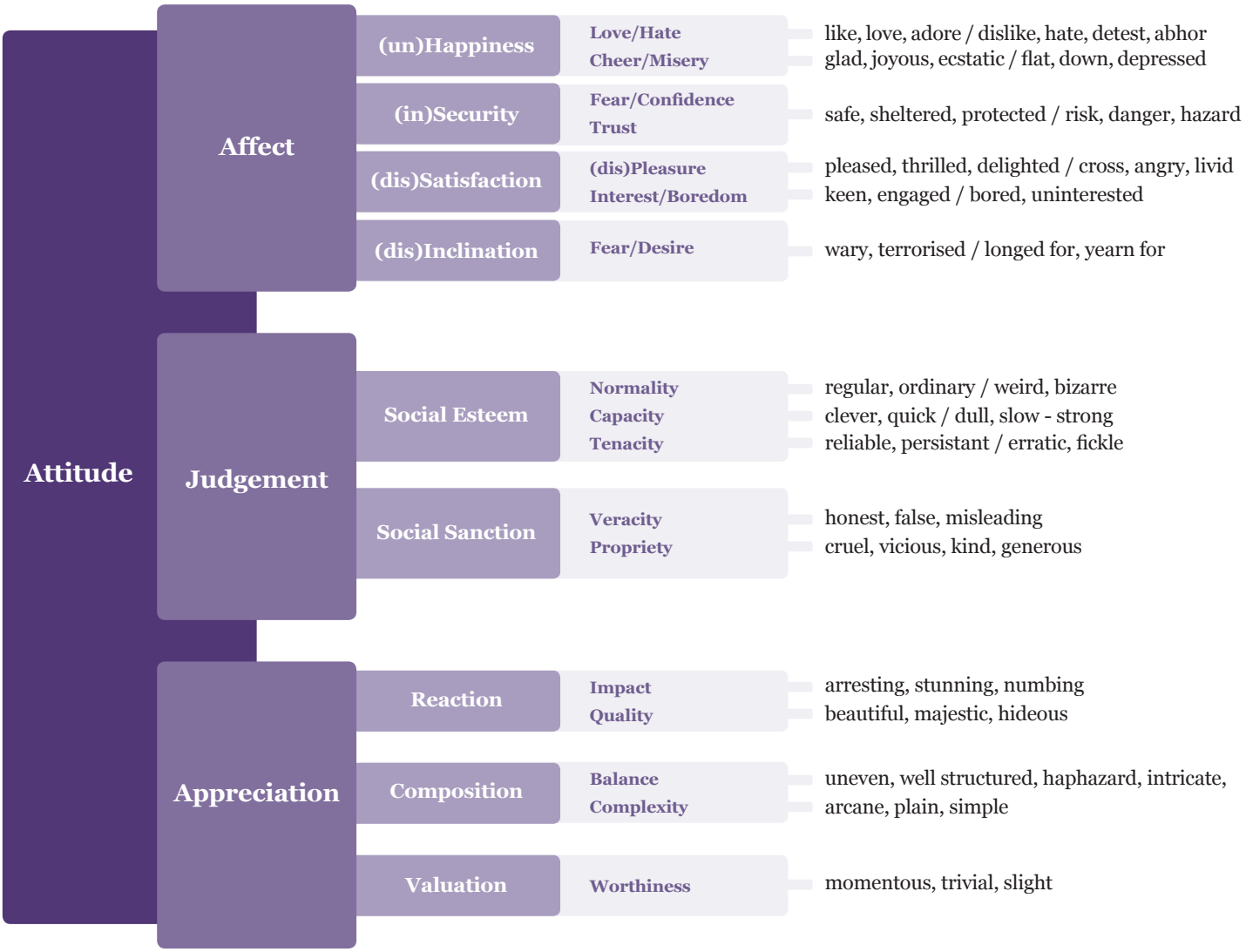


Figure 1. The attitude network (adapted from Martin & White, 2005)

2.1.4

Extended the Appraisal Framework Across Modes and Media

This project was conceptually significant in its application of the appraisal framework for: (a) the pedagogic intervention of teacher knowledge of using the framework, and (b) students' attitudinal expressions through multimodal resources in multimodal text design. Students who have sophisticated knowledge of resources for constructing interpersonal meaning are more capable of developing believable characters in texts, and emotionally engaging audiences than students with less expert knowledge. Therefore, this research was needed to apply this knowledge for the benefit of educational end-users—teachers, students, and their school communities.

The appraisal framework concerns three interacting elements: attitude, engagement, and graduation (see Figure 2 below). Engagement is concerned with the sources of the appraisal and the ways in which the author aligns with the sources. Engagement also addresses the degree to which the appraisals are portrayed as negotiable. Graduation deals with greater or lesser degrees of intensification of affect, judgement, or appreciation (e.g., satisfied, indulged, satiated).

Teachers and students were taught that the attitude network (see Figure 1) addresses three axes of meaning—affect (emotions), judgement (of people), and appreciation (of non-human things). They learnt that the attitude network includes four broad categories of affect—disinclination/inclination, unhappiness/happiness, dissatisfaction/satisfaction, and insecurity/security (see for example, Mills & Unsworth, 2018). For example, unhappiness can include feelings of melancholy (e.g., wistful, downcast, despondent) or aversion (e.g., dislike, hatred, abhorrence), while happiness can include gladness (e.g., pleasure, delight, euphoria) or affection (e.g., fondness, love, adoration). Disinclination/inclination describes fear (e.g., concern, trepidation, terror) or desire (e.g., want, longing, yearning).

Teachers and students in this project also learnt that within the attitude network the judgement of people involves two main dimensions—social esteem and social sanction. They developed new understandings of sub-categories within social esteem as capacity (which can be physical, mental or social capacity), tenacity (which refers to steadfastness and reliability), and normality (which addresses the normative location of a person's physical, mental, and social characteristics). The project teachers and students learnt that within judgement, social sanction deals with meanings concerning a person's honesty and ethics. They developed new knowledge that appreciation concerns evaluation of non-human phenomena in terms of their aesthetic features or significance.

This research applied the appraisal framework as a toolkit for developing teachers' and students' understanding of emotion, judgement, and appreciation in written language (Unsworth & Mills, 2018). This project developed teachers and students' knowledge of the three systems of attitude resources: (a) feelings; (b) judgements of individual's characteristics and capacities and the veracity and ethics of behaviour; and (c)

appreciation of the significance and aesthetics of natural and artificial phenomena. The teaching of the appraisal framework offered students a system of multimodal resources to apply and express knowledge of attitudinal language, which they were able to apply within a variety of text forms, modes, and media with positive outcomes. Teachers developed knowledge and confidence of using the appraisal framework to inform pedagogy to enhance students' repertoire of multimodal resources for expressing attitudinal meanings in self-authored texts.

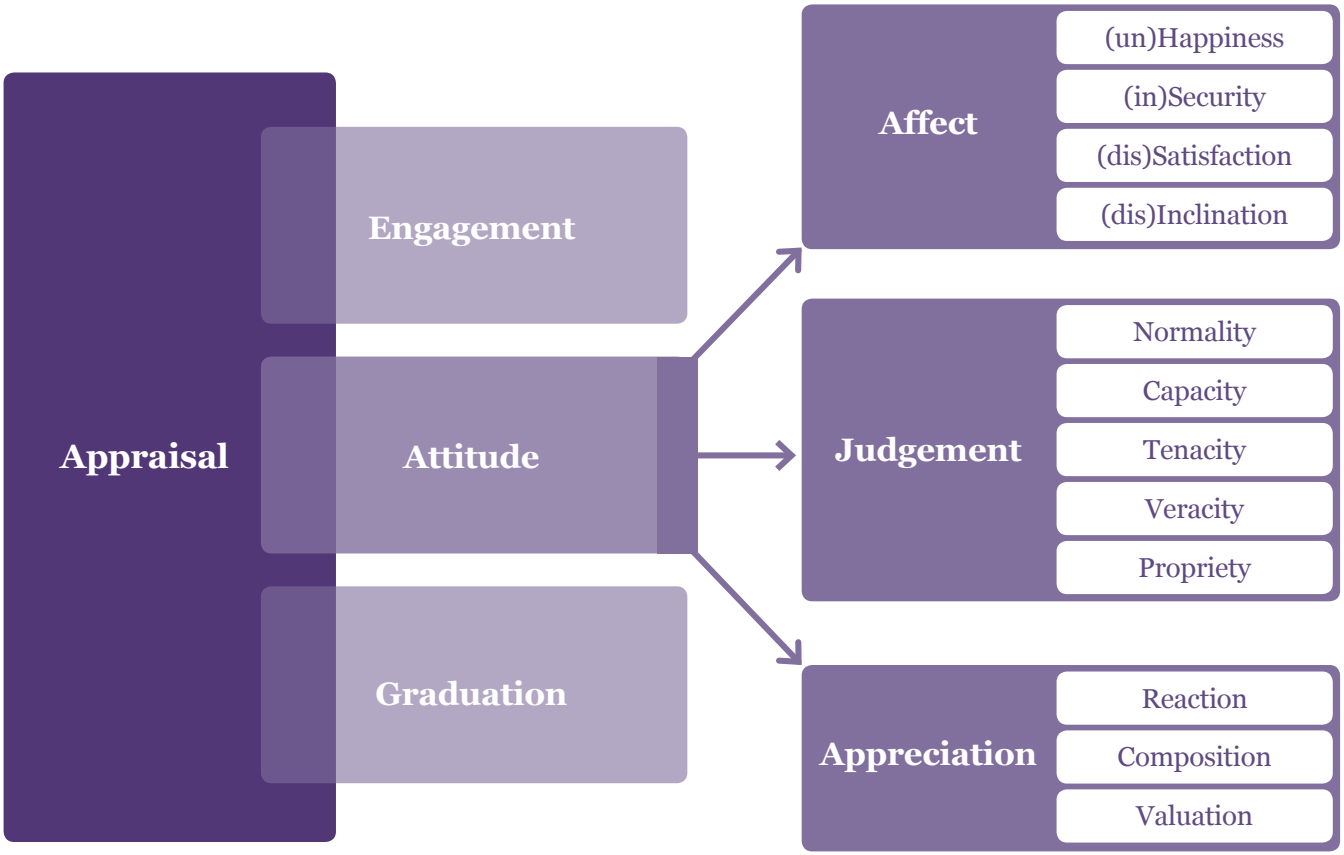


Figure 2. The attitude network within appraisal resources (adapted from Martin & White, 2005)

2.1.5

Targeted Industry Partners' Research Goals

The industry partners identified the project aims as a critical area of professional development for teachers, and as vital for student wellbeing. For example, Marsden and Yugumbir State Schools had digital media infrastructure, such as one-to-one laptop classrooms, but many teachers of students in the middle years (ages 8.5 to 11.5 years) wanted advance support to use laptops for multimodal design in digital sites of display. Teachers at Flagstone State School were seeking pedagogical and grammar knowledge for supporting students' writing across different modes and media.

The school principals PI (Partner Investigator) Clay, PI Trembath, and PI Quinn worked with CI (Chief Investigator) Mills and the university to support students' emotional wellbeing, to enhance students' abilities to manifest both positive behaviours and internalisation of emotions. Big Picture Industries had created not-for-profit programs and events that connected communities via creative digital media. The Director, CI Williamson, approached CI Mills to develop a research focus for the organisation's visual literacy programs in schools. This project addressed a priority need of our industry partners—the multimodal expression of emotions of students.

2.1.6

Innovatively Enhanced Students' Multimodal Expression of Attitude

This project was innovative because it synergised schools, visual media experts, and state education policy makers to address a critical social and educational problem. It produced new knowledge for schools to teach the multimodal language of emotions using contemporary media. It provided pedagogical guidelines and online resources for schools in the DoE. The project contributed to the research development of Big Picture Industries Inc. to refine its visual imagery programs. Most importantly, this research led to significant benefits for students, who gained expanded language repertoires to respond to threats to emotional wellbeing. The partnership produced research of high relevance to end-users.

2.1.7

Innovative Approach to Collaborative Partnership

The research was innovative because it developed novel approaches for teachers to build students' multimodal language of emotions across modes and media. Multimodal literacy research has advanced exponentially in recent years in education across different populations and digital media forms, as Mills (2010) has critically reviewed.

The innovation of the research was not only the use of digital media platforms in schools, but in conceptualising ways that it developed students' multimodal attitudinal expression. The project applied current semiotic understandings of multimodality and attitudinal language in texts to enhance curriculum practice and children's emotional and social lives. It developed a new pedagogical approach to build the students' emotion, judgement, and appreciation language resources.

3. Methods

3.1

Teacher and Student Selection

Teachers, students, and schools were selected in collaboration with research partners, having identified urban classrooms in the most disadvantaged Statistical Local Areas of the Greater Brisbane area (Australian Bureau of Statistics, 2016). The location of the sites in the Greater Brisbane area permitted the intensive engagement of the team necessary to build knowledge and strengthen teaching practices.

School principals and curriculum leaders at each site contributed to the design of the project, including the years prior to the funding and during implementation, identifying multimodal literacy as an area of importance in the curriculum. School leaders selected interested teachers from the upper-primary school to be involved in the research. The principals invited the research team to present professional development sessions for teachers to learn about the appraisal framework in English, and its extension to multimodal communication. The team conducted quarterly-planning meetings in each school with teachers and a visiting media artist to develop lessons that were aligned to the goals of the National Curriculum (ACARA, 2018).

All upper primary teachers of years 4–6 (students aged 8.5–11.5) across the three sites participated in professional development workshops (12 classrooms teachers = 36 teachers per year). Larger numbers of teachers also engaged in professional development sessions for all primary staff in some schools, and for specific clusters of year levels in others (e.g., teachers of years 4–6), conducted by the research team.

Upon recommendation of the school principals, a subgroup of leading teachers of pedagogy, was offered the opportunity to engage in year-long cycles with their student cohorts. Year-long cycles were necessary because of the annual movement of teachers to different classrooms or schools. Data were collected from teachers of 12 classrooms.

A total of 560 students, ages 8–11 years, from 20 primary classes in three Logan and Beaudesert schools received classroom intervention. Students who did not return forms participated in the multimodal activities as part of their learning, but no data were collected from them. Data were collected from 336 students. The participant selectivity permitted a detailed portrait of how individual teachers can reconfigure practice in this learning domain, and the corresponding augmentation of students' multimodal emotive language resources. The project received ethical clearance from a human research ethics committee (Ethics Register Number HREC 2017 88T), and participants provided voluntary, informed, understood, and signed consent (teachers, guardians, and students).

3.2

Research Timeline

The first phase of this project involved building collaborative relationships with industry partners (DoE, Big Picture Industries Inc., Flagstone State School, Marsden State School, and Yugumbir State School); conducting workshops and curriculum meetings with teachers and industry partners; and baseline data collection. The second stage of the project involved the establishment of knowledge networks through teacher engagement and connectivity via teacher blogs within the Learning Place site by DoE; providing in-class support to teachers of the application of new knowledge to curriculum; and data collection to answer the research questions. The final stage of the project involved coding and analysis of data, and the evaluation and reporting of the research findings.

The project start date was April 8th, 2016 and the conclusion date was April 12th, 2019. However, because the project was transferred from Queensland University of Technology to Australian Catholic University the end date was extended to Dec 2019. The project was required to be inactive from December 13th, 2016 to July 15th, 2017 because ARC grants cannot be operational during transfer between institutions. The research team conducted collaborative planning meetings with the schools and worked intensively with schools in those periods to implement classroom lessons by the project media artist in three schools in the second half of each project year.

3.3

Teacher Professional Development

This project broadened the range on meaning-making resources for students to communicate attitudinal meanings through innovative approaches to teacher professional development and classroom intervention. Knowledge networks were established with teachers, which combined the delivery of face-to-face workshops for teachers in multimodal design, attitudinal grammar, and pedagogy, with follow-up via teacher blogs within the Learning Place site by DoE. Research classrooms received in-class pedagogical and research support by the CIs, PIs, HDRs (Higher Degree Research Students), RA (Research Assistant) and media artist in all phases.

A series of over 20 school-based meetings between all named researchers on the project and the project teachers, year-level coordinators, heads of curriculum, deputy principals, and principals from 2016–2018 facilitated collaborative planning of units. These meetings were led by Professor Kathy Mills and supported by Professor Len Unsworth, Joshua Darrah, the media artist on the project, and where relevant, by Mark Williamson, Big Picture Industries Inc. This collaboration involved the in-kind time contribution of the university academics and school participants.

Additionally, 13 three-part workshops were conducted for teachers by the CIs, with the venues rotated between the three school sites (2016–2018). These whole-day and whole-school professional development workshops were implemented at schools to address (a) attitudinal grammar in multimodal texts; (b) digital media creation; and (c) pedagogy and curriculum design. From the larger cohort of teachers involved in professional development sessions, the selected teachers of research classrooms in each school adapted and delivered new knowledge to other teaching staff in the school. This enabled the teachers to work towards and maintain "highly accomplished" and "lead" certification as outlined in the expectations of the Australian Professional Standards for Teachers (Australian Institute for Teaching and School Leadership, 2017; Queensland College of Teachers, 2019). The opportunity for key teachers to lead in this way was foregrounded in the selection process to maximise impact beyond the 18 research classrooms.

This study developed and demonstrated a pedagogical approach for the English curriculum, called The Multimodal Expansion of Evaluative Expression (M3E cycle). This approach enabled teachers to assess and advance students' capacities to appropriately incorporate attitudinal meaning into the multimodal text creation (see Figure 3). The M3E cycle demonstrates an innovative approach for teachers to teach attitudinal language. It applies non-verbal, visual, gestural, spatial, and other modes of communication in popular texts and dramatisations to strengthen students' language skills for evaluative and attitudinal expression.

A research showcase held at Marsden State School in 2018 enabled all research partners to present project findings to other regional schools. This event was supported by the local branch of the Australian Literacy Educator's Association and the Institute for Learning Sciences and Teacher Education, ACU. The forum provided an opportunity and a platform for teachers to reflect on the knowledge growth and involvement in the project and to celebrate student learning. The research findings were presented at the annual DoE Research Showcase from 2016–2018. Research findings were disseminated widely to state and interstate participants across the higher education and schooling sectors.

The project indicated that teacher professional development workshops yielded personal confidence and knowledge growth about the pedagogical use of the appraisal framework. The main outcomes of using collaborative approaches with industry professionals, policy makers, and universities for teacher professional development were: (a) teacher learning and teaching of appraisal framework through in-class support, modelled lessons, and curriculum planning meetings; and (b) the sharing of knowledge, skills, and materials among teaching teams across each year levels widened the impact of pedagogical and research initiatives. Furthermore, the engagement of school principals and heads of curriculum in the research project informed whole school curriculum planning to enhance students' long-term social and emotional outcomes.

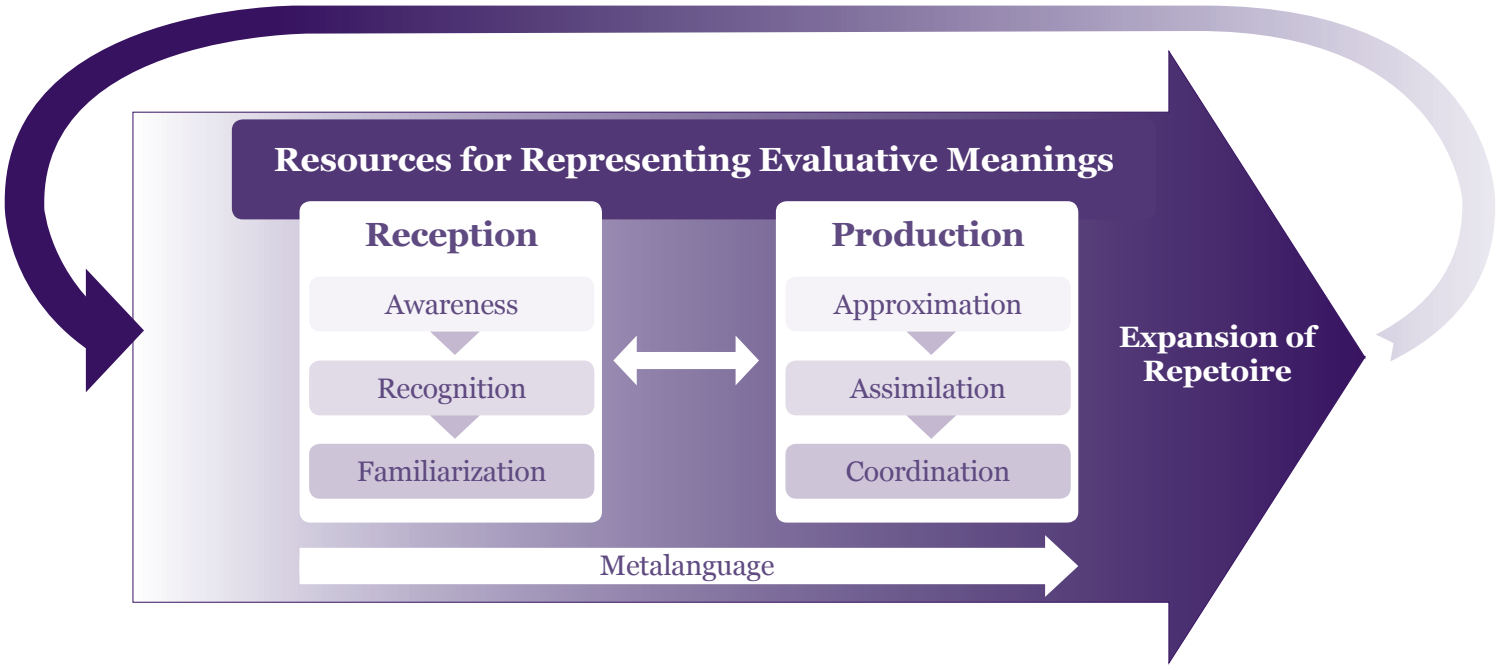


Figure 3. Multimodal expansion of evaluative expression (M3E) cycle (© Unsworth, L. & Mills, K. A. 2019)

3·4

Classroom Intervention

Six school terms of in-class work were delivered to 20 classes (560 students), including to some double classes at Marsden State School and Yugumbir State School. A series of up to eight lessons, 1.5 to 2 hours per classroom, was planned and delivered to each of three schools per term. The lessons were aligned with the content descriptors in the Australian Curriculum: English that require students to attend to the use of attitudinal meanings in texts (ACARA, 2018).

Levels of face-to-face support by CIs and RAs were negotiated with teachers, approximately 12 visits per teacher per year. The researchers and Joshua Darrah worked with the three schools to conduct over 20 curriculum planning meetings before, during and after the intervention phase: twice per term by the research team at each of the participatory schools. These meetings were attended by teacher participants, other year-level teachers, heads of curriculum, deputy principals and, the principal of each of the schools.

Mark Williamson from Big Picture Industries Inc. ran six full-day visual literacy development workshops, including to some double classes at the schools. Seven classes (296 students), from years 4–6 also engaged in programs from Big Picture Industries Inc., and the digital images created by students were collected from these activities. Big Picture Industries Inc. provided student access to professional digital cameras and studio equipment and assisted to expand students' knowledge and multimodal expression of emotion, judgement, and appreciation through digital media.

Students were taught how to express affect, judgement, and appreciation using the appraisal framework across multiple media including film, comics, animations, posters, and letters that included digital imagery, gestures, sound, writing, and narration. During the series of in-class support visits, the research

3·5

Learning Activities Across Modes and Media

The teachers were participant observers in the series of lessons taught by Joshua Darrah. Following those lessons, the teachers consolidated, elaborated, and extended the learning experiences into other English curriculum sessions each week. Teachers were supported in incorporating the appraisal framework and the teaching of digital media designs into pedagogic practice.

Table 1 illustrates examples of learning activities that the teachers and Joshua Darrah used in media lessons and across modes for teaching attitudinal meaning and expression. Some of the activities presented here were developed by Joshua Darrah. The learning activities were delivered to the students to develop a repertoire of multimodal resources for expressing affect, judgement, and appreciation. They sought to familiarise students with metalanguage that they could use to describe the different categories of affect, judgement, and appreciation across a range of modes and media.

- The learning activities had the following outcomes:
- Expanded students' knowledge of emotional expression and judgement of the characters;
- Enhanced students' knowledge of the concept of appreciation of things;
- Developed the students' experiences in attitudinal expression and multimodal authoring across a range of media; and
- Developed students' abilities to communicate knowledge in multimodal designs through written text, facial expressions, and body language of characters.

Table 1. *Learning Activities: Affect, Judgement, and Appreciation*

Affect	Judgement	Appreciation
Teaching the Appraisal Framework		
Teachers introduced students to the language of positive and negative affect within the attitude network, intensities of affect in literature, film, drama, emoticons, and other animated formats.	Teachers introduced students to positive and negative judgements within the attitude network, including language to inscribe and evoke these judgements.	Teachers introduced the concept of positive and negative appreciation using photos of 'toys of disappointment' to teach vocabulary about the expectation, worth, and value of non-human things and phenomena.
Affect	Judgement	Appreciation
Live Tutorials of Digital Media Design		
Teachers used live tutorials and walked students through the design process for text construction such as movie, comic, posters, and animation to communicate affect. Teachers modelled text construction with the media artist showing each step in the process using digital cameras, desk top computers, iPads, and software such as Windows Movie Maker, Comics Head, Canva.com, Animation Creator HD.	Students were taught how to use the comic creator software Comics Head for iPad. Students selected comic layouts, chose settings and characters and selected from a range of gestures, facial expressions, and postures depicted by characters. Teachers worked with students to create their own moral dilemma stories. Teachers demonstrated to students how to use dialogue and character thought bubble content for their comic using pencil and paper, prior to being introduced to the comic creation software.	Students were taught how to purposefully juxtapose a range of music segments, raw footage, scenic stock images, transitions, screen text, and original voice-over to communicate appreciation in their film trailers. Students were given a live tutorial, with the media artist showing each step in the comic creation process, displayed by connecting the iPad to the large interactive whiteboard. The students were taught how to generate a new comic, add backgrounds, characters, speech bubbles, and extra pages, as well as how to edit their comics to express appreciation.

Students were taught image creation techniques — visual perspectives and colour— sound and music, to evoke affect meaning in paper and digital media texts (e.g., drawing lines evoked by the mood of various classical music segments).		Teachers modelled how to design a poster (for example, using Canva.com and PowerPoint) to evoke appreciation (reaction) in target audiences.
Affect	Judgement	Appreciation
Vocabulary Building		
Teachers taught facial expressions for different emotions, expanding students' range and level of emotive vocabulary. Students matched new emotive vocabulary (e.g., cheerful, jubilant, engrossed, euphoric, despondent) to images of faces in printed material, drew faces to match the emotive vocabulary, and used vocabulary for lower and higher-level intensities of an emotion (e.g., disgusted, sickened, repulsed).	Students co-constructed and assessed sentences on interactive whiteboards, showing characters behaving in certain ways (e.g., brave, sneaky, mean). They discussed and contributed ideas for the character behaviours and associated judgement words, and took students notes on worksheets. The media artist discussed familiar superheroes from popular texts and scribed a list of words offered by the students to judge the superhero's attributes.	Students evaluated images of artworks, books, and other inanimate objects, and shared their written appreciation words. Students wrote sentences that expressed appreciation of non-human things. The class supplied appreciation words to describe reaction to things and composition and valuation of things. Appreciation word walls and lists of vocabulary were created using a combination of teacher and student generated vocabulary for high visibility. Students wrote descriptions to illustrate appreciation from the appreciation word banks.

Teachers created an affect word wall to build new vocabulary for each emotional state, and teachers modelled the use of vocabulary in sentences. Students were shown a colour wheel to select emotive vocabulary to suit the hue (e.g., red for anger or passion) and explored abstract images or lines to show emotions.

Teachers illustrated how to write sentences that expressed emotion and judgement meanings.

Teachers engaged students in discussions to develop students' vocabulary and abilities to analyse and communicate emotional expressions as they dramatised emotions and transitioned between various body languages, including standing and sitting postures, and subtle and animated body language.

The class wrote down core and non-core judgement words relevant to the behaviour of the acted characters.

Students used thought clouds to include characters' inner worlds of emotion, judgement, and appreciation and speech bubbles for characters' direct expression of appreciation through dialogue, as well as indirect expression through inserted narration panels.

Students highlighted words that described judgements of characters.

Teachers created a judgement word wall or list of vocabulary for high visibility.

Affect	Judgement	Appreciation
Drawing Activities		
Students created emojis and facial features to represent emotions that were described in written sentences. Students created drawing animations individually on iPads using a stylus to show emotions intensifying (e.g., down, sorrowful, miserable) or transitioning (e.g., excited to furious). Students drew body language emotions with a focus on using different colours, facial expressions, and movements of arms, bodies, legs, and feet to communicate the emotions.	Teacher and students together drew and wrote full recaps of story plots with main story beats, including mapping the percentages of trust/like/dislike between the main characters. Students drew ultimate characters with superpowers to communicate judgement of capacity.	Teachers instructed students to draw things such as objects, memories, experiences, places, locations, and days to express positive and negative appreciation.

Affect	Judgement	Appreciation
Drawing Activities		
Teachers and students dramatised facial expressions, and the class interpreted the emotions. Students were taught how to interpret and produce body language for different emotions, for example, as applied in comics.	The media artist and class performed charades of different imagined characters whose behaviours showed contrasting positive and negative qualities.	Teachers and students preformed charade scenarios to communicate appreciation of things—arresting, trivial, important—such as ice-cream, money, jewellery, pets, and food.

Affect	Judgement	Appreciation
Students dramatised how to express transitioning body language from one emotional state to another and applied this knowledge in written and visual modes.		
Strategic Viewing of Animated Films and Video Compilations		
Students viewed Pixar and Disney movie animation shorts. Teachers paused the clips at strategic points for students to interpret the emotion evoked by the body language of characters in the movie animations, the description of body language in novels, including standing and sitting postures, and obvious and subtle body language.	Teachers provided students with animated shorts for viewing and analysis of emotion and judgement meanings. For example, students were supported to identify, assess, and discuss different interpretations of judgements of the characters, and to decode judgements of characters' remarkableness, capacity and tenacity (social esteem), and veracity and propriety (social sanction) across different modes. Students described characters in video compilations, such as soccer players displaying good and poor sportsmanship.	Students viewed animated movie clips. Teachers paused the clips at key points to draw attention to elements of the clip, such as the quality of the animations, music, realism, character development, and plot using appreciative language. Students recorded appreciation responses in written form.

Affect	Judgement	Appreciation
Literature Activities		
Students read sentences from handouts and then wrote and discussed the emotion they deciphered, and the reasons they interpreted the emotions.	Students evaluated judgement of characters in narratives and applied this knowledge of characters in their written texts. For example, they read about ethical dilemmas and added their own judgement words to describe a course of	Students read posters to compare the effectiveness of written texts and font sizes to gain audience attention.
Students read out their own written sentences and the rest of the class guessed the emotions.	Students decoded judgements of characters across different modes in text including speech, writing, image, gesture, and body movement.	Students read sentences to decode appreciation of things and places. They highlighted the clues in the sentences and noted words to describe things and places.
Teachers and students read printed letters and discussed emotions that stories and facts invoked in the reader/listener.		

Affect	Judgement	Appreciation
Audio Exercises		
Teachers introduced various instruments and explained the concept of tempo, pitch, and music key to communicate affect.	Students predicted the tempo and pitch of sounds for characters and discussed the similarities and differences.	Teachers lead class discussions about students' interests and hobbies (for example, music and bands that they liked).
Students matched different types of lines (zig zag, wavy, circular, parallel, single, etc.) to different types of music that they felt fitted with the music.	Students were taught how to incorporate a variety of music, voice over, and sound effects that evoked judgement meanings	Students listened to and discussed music that invoked feelings of positive appreciation in the film trailers.

Students used music of varied volume, pitch, and minor keys to intensify emotions and mood (e.g., high-pitched violins to signal fear, and soft to loud to create suspense and drama in the film trailers). Students predicted the tempo and pitch of the sound for story characters.		
Affect	Judgement	Appreciation
Writing Activities		
Teachers modelled how to use emotion language in grammar, and students applied emotive language in the writing of letters. Teachers showed their classes how to write their own sentence to give emotion clues, for example, sad, angry, excited, and nervous. Teachers scribed a list of words offered by the students and from Martin and White (2005) to expand students' non-core emotive vocabulary and to support students to interpret emotional states, such as 'adore', 'abhor', and 'terrorised'.	Students wrote rhetorical devices used in persuasive sentences. Students circled words and phrases that that were used in sentences to persuade judgement (ethics). Students wrote sentences that applied the language of judgement to evaluate the moral actions and capacity of characters using words from a list of non-core judgement	Students viewed example advertisements and posters and listed the target audiences and what things the poster advertisements wanted them to react to. Students analysed posters and discussed and wrote sentences in terms of the sense of colour, text, font, imagery, and combined design used to communicate appreciation of things, places, and events. Students wrote their own posters after choosing from various topics including some of their own.

The project demonstrated that these learning activities yielded strong student language growth across a range of modes and media, both confirming and extending existing multimodal research with a much stronger application of theories in real classrooms. The main outcomes from the classroom intervention were:

a. explicit teaching of attitudinal language yielded positive learning outcomes for students' multimodal literacy; and

b. the use of guided instruction in digital design by experts outside of schools in collaboration with teachers, strengthened the quality of students' multimodal literacy.

Likewise, teaching the appraisal framework, such as attitudes—intensities of emotions, judgement, and appreciation—strengthened English and literacy curriculum. The results show that popular animations, digital comics, film trailers, posters, and letters are engaging strategies for teaching attitudinal language in contemporary classrooms. Teachers can also use learning activities such as dramatisations and film to improve students' emotional expression (see for example, Mills, et al., 2014).

3.6

Research Instruments and Outcomes

The following five data sets, matched to research questions 1 and 2, were collected over two and a half years of the project in classrooms from January 2016–May 2018:

- Student work samples;
- Pre-tests and post-tests;
- Audio-recorded semi-structured student interviews;
- Audio-recorded semi-structure student interviews; and
- Teacher blogs using the Learning Place Ed Studio (2 x 20-minute posts per teacher).

These data sets and the outcomes from the analysis are described in more detail below.

3.6.1

Student Work Samples: Outcomes of Intervention

Student work samples included digital comics, drawing animations, film trailers, posters, and letters. The data were interpreted through multimodal appraisal analysis: forms of communication such as gesture, facial expression, body movement, speech, writing, images, and sound. The outcomes of sample units of work are presented below.

3.6.1.1

Digital Comics Unit

Digital comics can be rich textual sources for analysing affect (emotion), judgement (ethics), and appreciation (aesthetics) in multimodal texts. A particular feature of digital comics is the important role that images play in communicating attitudinal meanings about emotions, ethics, and aesthetics. Figure 4 shows a sample of adigital comic created by students in this project.

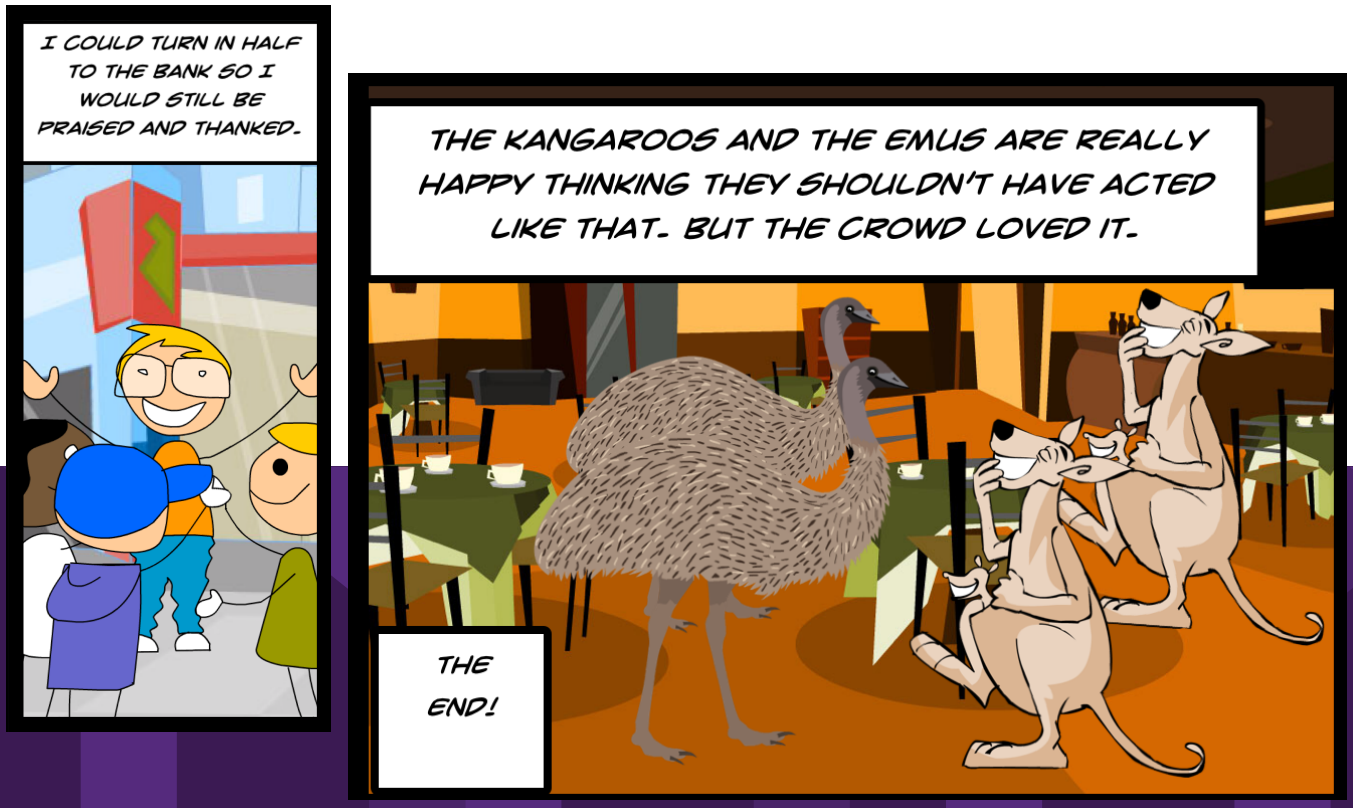


Figure 4. Sample digital comics

Figure 4 illustrates how attitudinal meanings in digital comics can be communicated through elements such as the facial expressions, body movements, and gestures of the depicted characters.

In the second frame, affective meanings are communicated through bodily movements, such as the kangaroo's dancing feet, which invokes the feeling that comic characters were feeling jubilation.

3.6.1.2

Outcomes of Digital Comics

Table 2 shows how students represented attitude in digital self-authored texts such as digital comics. The findings showed that 100 percent of students communicated attitude in digital comics through affect and judgement categories. This table demonstrates how the research adapted the appraisal framework by Martin and White—originally developed to address language resources in discourse—to students' application in digital comics. Ninety-eight percent of students applied categories of appreciation to communicate attitudinal meanings in digital comics. They applied a number of multimodal features to indicate emotion in the comics: narrative representation, speech and thought bubbles, facial expressions, images, colour, motion lines, gestures, and touch.

Students inscribed (directly) and invoked (indirectly) a range of positive and negative affect within the eight major sets of meaning of affect groups. Students' application of affect categories in film trailers included satisfaction (85%), dissatisfaction (75%), happiness (94%), and unhappiness (82%). The most consistently applied judgement category across the comics was the use of propriety (100%). The least consistently applied judgement category across the comics was the use of tenacity (26%). Students represented and expressed appreciation across the following categories: reaction (96%); composition (23%); and valuation (76%).

The analysis of the digital comics indicated that students' learning progressed from use of core vocabulary to an enhanced awareness and use of multimodal ways to express affect, judgement, and appreciation in digital comic creations. Student capacity to communicate feelings and opinions was enhanced with greater degrees of intensification across various modes. Students deployed multimodal resources to communicate attitude including image, written text, narrative text, facial expression, gesture, and body movement.

Table 3 further illustrates how students applied attitudinal language in the comics according to the Martin and White (2005) framework: affect—happiness (HAP), satisfaction (SAT), security (SEC); judgement as esteem—capacity (CAP), normality (NOR), tenacity (TEN); judgement as ethics—veracity (VER), propriety (PRO); and appreciation (APP). Students learned how to express graduation as infused (non-core vocabulary), isolated using grammatical (e.g., very), and lexical items (e.g., *exquisitely* beautiful) or figurative expressions (see for example, Unsworth & Mills, (2019), submitted for second review).

Furthermore, there was evidence of positive and negative occurrences of each appraisal category in each comic text. The data showed that the digital comics creation unit effectively empowered the majority of students to communicate attitudinal meanings through affect, judgement, and appreciation categories.

Affect	Multimodal examples
Happiness 94%	Facial expression: Smiling face, laughing
Unhappiness 82%	Facial expression: Sad face with frown and crying with tears
Satisfaction 85%	Written text as a thought bubble: "He felt pretty good about taking the money in his pocket."
Dissatisfaction 75%	Gesture: Clenched fists to show anger
Inclination 78%	Body movement to show desire: Walking towards and pointing at money next to an ATM
Dis/inclination 30%	Motion lines on and around bodies to represent fear and body shaking (trembling)
Security 46%	Written text to inscribe confidence: "So the next morning I had walked to school as if there was no problem."
Insecurity 94%	Facial expression that appears surprised and fearful

Judgement	Multimodal examples
Normality 73%	Written text as thought bubble: "My sister will think that I'm the best brother ever!"
Capacity 85%	Body movement to show skill and capability: Kangaroo jumps up in the air to score
Tenacity 26%	Image of superheroes in a thought bubble
Veracity 82%	Written text: "So I decided to be honest and tell the truth."
Propriety 100%	Written text: "Even the joey inside the pouch seemed as evil as the mother!"

Appreciation	Multimodal examples
Reaction 96%	Written text as thought bubble: "wow" at the sight of green banknotes and a bag of money
Composition 23%	Written text: "It was a good game and no fights happened."
Valuation 76%	Written text: "This is the worst game I ever played."

Table 2. Affect, Judgement, and Appreciation in Comics

	ATTITUDE										GRADUATION			
			Affect			Judgement				Appreciation	Isolated			
						Esteem			Ethics					
	INVOKED	INSCRIBED	HAP	SAT	SEC	CAP	NOR	TEN	VER	PRO	APP	Infused	Grammatical	Lexical	Figurative
Gina	12	32	5	5	2	2	0	1	0	29	1	5	0	0	2
Ozak	9	15	1	8	1	2	1	0	0	8	3	6	1	1	3
Petra	5	4	1	2	1	0	0	0	0	3	2	1	1	0	1
Aleni	3	4	0	1	1	0	0	0	0	5	0	0	0	0	1

Table 3. *Application of Attitude and Graduation in a Sample of Comics*

3.6.1.2

Digital Animations Unit

Digital animations have been used worldwide for children and communities to share experiences of the world multimodality. During English lessons the teachers created and presented simple example animations using the Animation Creator HD app to show characters expressing emotion, judgement, and appreciation. For example, the teachers modelled how to draw a character blinking before displaying an emotion such as anger or unhappiness. Here are some examples of how students demonstrated knowledge of attitudinal language through the creation of drawing animations using the iPad app Animation Creator HD (see Figures 5 and 6).

The example presented in Figure 5 demonstrates how students used multimodal drawing techniques to depict anger in digital animations. Anger was represented through the character's eyes, gritted teeth, flushed face, bright red body, and corrugated hair.

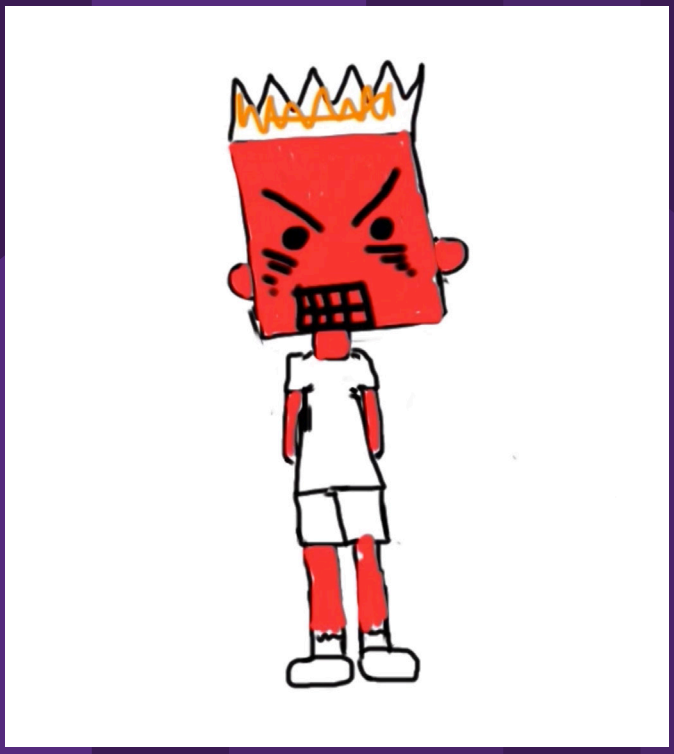


Figure 5. Sample animation of anger

The animation depicted in Figure 6 shows how students represented unhappiness in digital animations. The author communicated feelings of sorrow and melancholy through drawing techniques such as head shape, facial expression, and luminous tears.

Students individually created digital animations by drawing animations on iPads using a stylus. They redrew simple cartoons multiple times over a faint outline of the previous drawing, and added modal elements: different written texts; facial expressions; gestures; body movements; and sounds. The images were joined together in a rapid moving sequence to create final animations.

Figure 6. Sample animation of unhappiness

3.6.1.4

Outcomes of Digital Animations

The findings indicated that students learned to express attitudinal meanings in digital animations through a combination of modal elements, such as written text, speech bubbles, visual prop, and bodily position and posture. For example, they used mouth movements, eye changes, eyebrow movements, tears, and body language to communicate emotion. Similarly, students developed a capacity to use text features, such as visual elements, narrative sequence, colour change, interaction between characters, speech bubbles, background scenery, and long shots to show meanings about judgement (for example, see Figure 7).

Students orchestrated semiotic elements to provoke emotions, such as through the choice of lines and colours, and through subtle facial expressions, body movements, and rhythms that were created in these moving multimodal texts. They created characters with varied facial expressions, body language, postures, and movement to communicate different dispositions and intensities of emotions. For example, affect meanings included happiness, affection, sadness, surprise, confusion, fear, relief, power, anger, loneliness, embarrassment, disgust, and a neutral disposition. Table 4 outlines a summary of the percentage of texts that applied various animation techniques and textual features for representing affect that students used to represent emotions in the creation of digital animations.

Figure 7. Animation of capacity

Table 4 illustrates the useful application of the appraisal framework combined with the power of creating animations for the multimodal expression of emotions. The results from the animation unit illustrated that students built up broadened and expert repertoires of multimodal resources to communicate intensified attitudinal meanings in sophisticated ways. The findings illustrated the useful application of the appraisal framework to provide a language to inscribe or invoke different attitudinal meanings through frame-by-frame construction of multimodal resources to tell stories, and to influence viewer emotion, judgement, and appreciation.

Text feature	%Used	Text feature	%Used	Text feature	%Used
Embodied communication		***Cartoon animation technique***		***Visual element***	
Mouth movements	77.78%	Simple drawing style	92.06%	Narrative sequence	92.06%
Eye changes	71.43%	Appealing characters	30.16%	Colour change	55.56%
Eyebrow movement	71.43%	Exaggeration	30.16%	Interaction between characters	41.27%
Tears	47.62%	Take and accent (e.g., blink before a shock)	20.63%	Speech bubbles	41.27%
Motion lines	46.03%	Appear and disappear	19.05%	Written words	39.68%
Body language matched to emotions	41.27%	Anticipation or suspense	17.46%	Background scenery	23.81%
Gestures	28.57%	Rhythm	11.11%	Interrogative mood	14.29%
Cheek changes	17.46%	Humour	3.17%	Long shot	7.94%
Hair changes	17.46%	***Emotion***		***Audio element***	
Touch	11.11%	Intensified emotion (two or more levels)	73.02%	Music	6.35%
Under- eye creases	6.35%	Trigger/event for emotion	69.84%	Sound effect	6.35%
Clothing change	4.76%	Transitioning emotions (two or more)	66.67%		

Table 4. *Emotions in Animations*

3.6.1.5

Book to Film Unit

A film trailer is a short preview of a film. Students created film trailers to express attitudes through modal elements, such as through spoken language of characters and narration, written text, image design, bodily movement, posture, gesture, gaze, facial expression, and audio editing techniques. Teachers at Marsden State School and Yugumbir State School collaborated with Joshua Darrah who taught the students novel filmmaking techniques to communicate affect, judgement, and appreciation. Students were also taught how to communicate attitudinal meanings in film trailers through a range of modal elements and multimodal resources, including music segments, scenic stock images, screen text, and voice-over within the film trailers. Students learnt filming techniques such as using video cameras, shooting, and editing.

Figure 8 displays snapshots of how the students worked in groups to create film trailers that were based on units of work on the famous children's books, *Paper Planes*, by Steve Worland (2015) and *Rowan of Rin*, by Emily Rodda (2004).

Figure 8. Sample snapshots from *Paper Planes* film trailers

Figure 9. Students as actors with school environments

Figure 9 illustrates example snapshots of how the students filmed themselves as actors within the school environment as they filmed Rowan of Rin trailers.

The top frame of Figure 9 is a snapshot from a scene in the playground that was used as Sheba's hut. There is an "along with the character" view of the main character (Rowan) who looks towards the antagonist (Sheba). This focalisation option assists the viewer to see things from the character's perspective (Painter, Martin, & Unsworth, 2013). The bottom frame captured a student actor who maneuvers through the shrubs of the school garden to act as Rowan when he journeyed through the forest.

3.6.1.6

Outcomes of Book to Film Unit

Teaching appraisal in filmmaking aimed to prepare students to work fluidly across persuasive, narrative, and other genres required in the Australian Curriculum. The results from the filmmaking unit indicated that students learned to express both positive and negative evaluations following Martin and White (2005; see: Table 5). Students communicated affect meanings that deal with matters of the heart. Meanings for judgements were expressed as traits that are admired or criticised. Students communicated meanings about categories of appreciation namely, properties, composition, and complexities of things that are valued or devalued and the viewpoints about processes and natural phenomena.

This unit successfully enabled students to communicate positive and negative representations of attitudinal meanings through scenes of overlapping multimodal elements, images, screen text, gaze, body position and posture, and other features such as outdoor location, use of daylight, and a focus on action within the frame. To demonstrate, the film trailers combined moving images, audio, text, and narration to evoke affect as happiness. Similarly, as actors, students combined gestures, postures, and bodily movements to provoke positive evaluations of the characters' capacities and persistence while at the same time students used camera angle to invoke positive and negative judgements of characters' capacities as they interacted with other actors, people and spaces in the school surroundings. Students created scenes with music that invoked feelings of inspiration and positive appreciation, punctuated by speech.

Table 6 shows the percentages of film trailers texts that applied techniques for multimodal language of attitude, realised through affect, judgement, and appreciation (including image, gaze, facial expression, body movement, posture, gesture, sound, speech, and written text).

The analysis showed that attitude was invoked through image design (n=100%). Student attitudes were communicated in the films through gaze and facial expression—78% in Rowan of Rin and 94% in Paper Planes. The analysis showed that 94% of students applied posture, body movement, and gesture to communicate attitude in the Paper Planes film trailers. The majority of the film trailers applied narration to express attitude (Rowan of Rin, 78%; Paper Plane, 94%). Students used written screen text in the film trailers (n=100%) to inscribe or invoke attitudinal meanings (affect, judgement, and appreciation).

Affect	Modes	Examples	Positive / Negative
Happiness	Sound	Rhythmic playful beats, energetic rhythms, major keys, harmonious chords	Positive
Unhappiness	Body movement	Head is turned left and right along the transverse plane	Negative
Security	Image	Sunlight gleaming through clouds radiates hope	Positive
Insecurity	Written text	"When sleep is death and hope is gone"	Negative
Judgement			
Capacity	Body movement	Students' hands and fingers dextrously make paper planes	Positive
Tenacity	Written text	"Rowan is weak and not brave"	Negative
Propriety	Speech	"He is bullying him"	Negative
Appreciation			
Reaction	Written text	"Look into the fiery jaws of fear"	Negative
Composition	Speech	"relentless and treacherous quest"	Negative
Valuation	Image	Use of aerial perspective over a dramatic city skyline showing landmark buildings	Positive

Table 5. *Examples of Affect, Judgement, and Appreciation Codes across Modes*

	Rohan of Rin Videos		*Paper Planes* Videos	
Modal Elements Invoking Attitude	%	Examples from Film Trailers	%	Examples from Film Trailers
Presented evidence of spoken language of characters and narration to communicate attitude in film	78%	• Used narration to inscribe and intensify affect (e.g., Character intensifies voice to inscribe fear of Sheba) • Used laughter to invoke happiness	94%	• Used spoken language to inscribe appreciation of a long-awaited accomplishment (e.g., I've got good news for you. The results, you're going to Japan!)
Applied written text to communicate attitude	100%	• Subtitles used to ask question to evoke suspense (e.g., Will Rowan survive?) • Used adjectives such as "weak not brave" to show judgement	100%	• Used exclamation marks • Used attention grabbing motion of text such as zooming in, rising, flipping, falling, gliding, and rotating onto the screen to represent paper plane flying
Presented evidence of image design to communicate attitude	100%	• Used close-up shots to create strong interpersonal engagement with the viewer • Used dark colours for insecurity	100%	• Used bright lighting to invoke hope and awakening • Used darkness and shadows to show negative mood
Demonstrated the use of gaze and facial expression to communicate attitude	78%	• Used interactional gaze to show attentiveness to people • Used opened mouth movements to show surprise	94%	• Used varied magnitude of eyebrow movements to show anger • Used transactional gaze to show positive reaction to things such as paper planes
Demonstrated the ability to use body movement, posture, and gesture to communicate attitude	89%	• Used varied posture of characters to show intensified emotion (e.g., collapsed on ground in pain) • Used climbing body movements on school playground equipment to show character's capacity	94%	• Used high fives and handshakes to show satisfaction • Used repeated shaking of fist to show high-level anger
Applied audio editing techniques to communicate attitude	100%	• Used music of varied volume to intensify mood (e.g., soft to loud to create suspense and drama) • Used varied pitch and minor keys to intensify emotions (e.g., high-pitched violins to signal fear)	100%	• Used volume to intensify the sound of paper plane landing on pavement • Used increasing tempo to show increasing suspense and drama

Table 6. *Percentage of Film Trailers Communicating Attitude Multimodally*

3.6.2

Pre-test and Post-test

Pre-tests and post-tests were conducted for each unit of work in all years of the project to enable comparisons between pre and post program. For example, for the unit of work on comics, the pre-test was composed of sentences that were drawn from a text about the Harry Potter stories by J.K. Rowling. Students categorised attitudinal expressions to indicate affect, judgement, or appreciation. Teachers administered the same assessment task for the post-test.

3.6.2.1

Outcomes of Pre-test and Post-test

The pre- and post-test results across the project units indicated that most students used a wider range of multimodal resources, such as non-core vocabulary and image resources, for depicting attitudinal meanings. For example, for the digital comics unit, the students completed a 15-item short answer exercise that was adapted from Humphrey et al. (2012) to serve as a pre-test (see Table 7).

The test scoring of students' responses provided insight into the extent and nature of the attitudinal grammar used by the students in digital comics (see Table 8). The low pre-test scores indicated that students initially had very limited initial understanding of the categories of attitudinal expressions. Conversely, the vastly improved post-test scores suggest that many students had broadened understanding of attitudinal expression.

The results from the pre-test and post-test in the digital comic unit showed that there was substantial growth in the students' recognition, understanding, and classification of attitudinal meanings. This assessment task was useful to support literacy pedagogy. It was appropriate for all students within the English classroom, including those with English as another language.

Use three different coloured highlighters to identify the explicit attitudes that are italicised in the extracts. Write the type of attitude in the space provided and add '+ve' or '-ve' to indicate whether positive or negative evaluation is used.

- Use pink to mark words and expressions which tell us the feelings of the writer or characters (affect).
- Use blue to mark words and expressions which judge the behaviour or personality of the author or characters (judgement).
- Use green to mark words and expressions which evaluate the qualities of things (appreciation).

	Extracts from Text 4.9	**Type of attitude**
Example	It made me really *sad* (pink) to feel that it is over now	-ve affect
1	Jamie and Adam *were disappointed* with the movie	
2	but I *loved* it.	
3	The action sequences are really *gruesome*	
4	And of course it was *tragic* when X died	
5	But even though it was a bit on the *intense* side,	
6	Ron finally learns to *trust*	
7	Neville becomes a real *hero*.	
8	I heard some academic say that the characters are *one-dimensional*	
9	I know some people on this forum have said that Harry Potter is too *simplistic*,	
10	I thought the way Snape's true character was revealed was *brilliant*.	
11	There are quite *complex* and *relevant* themes	
12	like how *ordinary* people can become *powerful*	
13	on the whole I think JK is a *great* writer	
14	Wouldn't it be *amazing* to have a new series built around their kids?	
15	I'm sure I'll *enjoy* rereading the books	

Table 7. *Adapted Pre-test and Post-test*

Class 5GB			Class 5NB		
Pseudonym	Pre-test Score	Post Test Score	Pseudonym	Pre-test Score	Post Test Score
Aisha	0	15	Nikita	3	15
Tamara	4	14	Seanna	4	15
Antonio	5	13	Saneo	1	15
Ray	3	14	Damion	2	14
Bebe	4	11	Earl	6	15
Harman	6	14	Cole	0	11
Deitah	5	11	Dahne	6	13
Amny	5	13	Jardine	3	14
Ismah	4	13	Roela	4	15
Calam	6	10	Ezera	6	11
Abraham	3	11	Natsaha	5	15
Joel	1	12	Ocana	3	12
Jeana	8	15	Sapula	5	14
Selma	3	15	Petra	6	15
Mae	2	15	Ngoti	2	13
Sheppey	4	9	Ozark	NA	15
Harold	5	12			
Kohen	0	10			
Aleni	NA	14			
Mean Score	3.8	**12.6**	**Mean Score**	3.7	**13.8**

Table 8. *Pre- and Post-Test Results for Two Classes*

The comparative results from the pre- and post-program yielded positive outcomes. As a result, teachers in the project extended assessment rubrics to itemise specific areas of attitudinal language that enhanced students' multimodal writing. The research findings have implications for teachers, year-level coordinators, and heads of curriculum for the assessment of multimodal literacy in the enactment of the Australian Curriculum: English.

3.6.3

Student Interviews

The student interview data set was used to determine how the students described techniques for communicating attitudinal categories across modes and self-authored texts. Attitudinal learning was interpreted through instances of students' use of multimodal grammar knowledge that was represented through forms of communication, such as gesture, facial expression, body movement, speech, writing, images, and sound. Students were interviewed about the use of attitudinal language and opinions and feedback about the learning experiences (refer to research questions 1 and 2). Table 9 indicates sample interview questions about how students communicated through attitudinal language.

The researchers followed interview techniques outlined by experts in the field of qualitative research (see for example, Raworth, Sweetman, Narayan, Rowlands, & Hopkins, 2012).

Sample Student Interview Questions		
Student use of affect	Student use of judgement	Student use of appreciation
"What facial expressions did you use for characters? Why?"	*"What kinds of judgements can we make about characters?"*	*"What three words could you write in a review to show appreciation of a "good movie (e.g., to show how it kept your interest?"*
"How can you show that someone is feeling sad without using the word 'sad'?"	*"How did you use images to show judgements about characters as moral (good) or immoral (bad)?"*	*"What 3 words can show appreciation—how it didn't keep your interest?"*

Table 9. Sample Questions: Student Reflections on Attitudinal Language

3.6.3.1

Student Interview Findings

The analysis of the student interview recordings demonstrated that students were able to articulate new knowledge of attitudinal categories. For example, student interview responses provided insight into the use of modal resources, such as speech, images, colour, and facial expression to invoke or evoke affect. When speaking about impersonating "the dark voice of the witch" Layla shared, "Because I want to give them some clues about what type of characters they are." Students explained in the interviews that the intentional use of colours and images was chosen to afford emotional tones such as warmth and vibrancy, and to indicate emotional states of the characters that students portrayed. Student interview responses provided insight into why, as actors, they chose and used different facial expressions to convey emotions. For example, students explained that the main character used "excited", "happy", and "joyful" facial expressions, and was "smiling a lot" because "he was going to Tokyo" to compete.

Student interview discussions suggested that after the book to film unit, they possessed new insight into human nature and understood the emotions of the book characters that they played. Table 10 shows some examples of how students talked about their expressions of affect (e.g., un/happiness, in/security, dis/satisfaction) though visage and colour; judgement (e.g., capacity, propriety) through image and written text; and appreciation (e.g., reaction, progression, quality of things, and valuation) through speech and image.

Sample attitude categories	Sample student interview responses
Affect	
Un/happiness insecurity—visage	Mia noted that her character "had a happy face and wasn't worried anymore".
Dissatisfaction—colour	Charlie explained: "I chose a red face because he's angry."
Judgement	
Capacity—written text	Ava said that her comic character is "incapable because she [the character] can't make a decision".
Propriety—image and written text	Henry said that his comic character has a thought bubble, seeing himself as a thief. Speech inscribes plans to split the money.
Appreciation	
Reaction—image and written text	Harry described the visual depiction of a purple "weird black hole" to indicate negative appreciation of the hole.
Valuation—speech	During the interviews, students described things as "meaningful", "effective", "effective", and "important".

Table 10. *Student Interview Results: Attitude Categories*

Students' positive learning experiences were consistently confirmed across the interviews. The student interview findings confirmed that the multimodal language of attitude, realised through affect, judgement, and appreciation, was evident in the students' self-authored texts. The students articulated how they extended their receptive understanding of non-core expressions of attitudinal meaning and the metalanguage used to classify these expressions in digital texts, such as comics. Student interviews confirmed these intended interpretations when asked to justify the design of the multimodal elements.

3.6.4

Teacher Interviews

Audio-recorded semi-structured teacher interviews (9 hours) were conducted over the life of the project. Reflection and evaluation meetings were carried out with teachers immediately following the implementation of the program, and a year later to map teachers' ongoing integration of new practices into the curriculum. The interviews collected data about the value of the enacted units on the growth of students' knowledge, and teacher observations of students' application of multimodal grammar for representing emotion, judgement, and appreciation. Teacher interview data were analysed through thematic coding using NVivo 10. See below for sample teacher interview questions and for further information about how the data were analysed.

Teachers interviews were matched to aims identifying:

a. approaches that enabled teachers to develop the grammar of emotion, judgement, and appreciation across different modes and media with students (research question 1); and

b. the observed growth in students' application of multimodal grammar knowledge for representing emotion, judgement, and appreciation (research question 2).

Table 11 illustrates sample interview questions about teachers' reflections on attitudinal language.

Sample Teacher Interview Questions		
Teaching multimodal affect	Teaching multimodal judgement	Teaching multimodal appreciation
"How did you teach students to create still and moving images to move emotions in animations (e.g., through framing, placing elements, lighting, and visual salience)?" *"How did you teach students to use speech (e.g., expression, volume, articulation, pitch, pacing and pausing) to communicate feelings in film?"*	*"How do you teach students to use images to show judgements in film?"* *"How do you teach students to show ethical behaviour in comics?"*	*"How do you teach students to use images to show judgements in film? a How can teachers help students to understand how comic characters' bodies—facial expressions, gestures, posture and movement—communicate appreciation?"* *"How can teachers help students to show appreciation of a good movie (e.g., to show how it kept their interest?)"*

Table 11. *Sample Questions: Teacher Reflections on Attitudinal Language*

Table 11 outlines a sample of questions from the teacher interview schedules about student multimodal design. The researchers applied principles of multimodality and categories of affect, judgement, and appreciation from appraisal theory to analyse the transcripts of teacher interview responses to items in the schedules.

3.6.4.1

Outcomes of Teacher Professional Growth

This study significantly impacted pedagogy as a means of knowledge acquisition and application. Findings emerged from the teacher interview recordings that teachers developed personal knowledge of the appraisal framework, and that teachers built the students' knowledge of this framework and taught its application in multimodal and digital text creation.

Teachers became more informed, skilled and confident about multimodal grammars and the appraisal framework. The teachers studied the book titled *Grammar and Meaning* (Humphrey et al., 2012) to strengthen understandings of the appraisal framework and its pedagogic application with primary school students. During a follow-up interview one of the teachers recalled: "Well, from the beginning … we were trying to understand it ourselves. So that's when we got that Grammar and Meaning book. The school purchased eight copies of the book so that it was available to the teaching teams from years three to six."

Teacher knowledge of the appraisal framework was reflected by comments such as, "myself as a teacher, I'm more *au fait* with what is the language of evaluation". Teacher knowledge growth was also supported by the media artist during professional development workshops with Joshua Darrah through live tutorials and presentations that illustrated each step in digital media design process. For example, teachers viewed Animation Creator HD training videos and Comics Heads training videos during the professional development workshop with Joshua Darrah. They also viewed PowerPoint presentations that were presented by the CI Mills, CI Unsworth, and all research partners at research showcases. Teachers used Australian Curriculum: English documents and handouts on the appraisal framework to select possible areas for implementing the framework (English descriptor and an element from affect, judgement or appreciation).

Data from the teacher interviews indicated that a key outcome of the project was that teachers supported students to creatively and consciously harness the multimodal potentials of digitally produced texts to inscribe and invoke attitudinal meanings in writing and digital communication. The teachers' interview responses provided insight into the teaching of attitudinal language in digital compositions: "We brought it into the English program, pre-teaching first, the appraisal framework, being explicit about the multimodal grammars". According to the teacher participants, a key benefit of the project was that within three weeks of engaging in the digital comic creation lessons the students had gained "richer" resources across attitude categories, including appreciation. Teachers reported that students' writing and multimodal text creation was "enriched through this learning" about the appraisal framework and its attitude categories (see Table 12).

Sample codes	Sample teacher interview responses
Affect Un/happiness and dissatisfaction—visage	"Students were able to manoeuvre the facial expression of the characters from a happy face, to an angry face, or a sad face to suit the situation."
Judgement Propriety—speech	"To set the task to invoke character judgements, they could choose stealing or the concept of peer group pressure."
Appreciation Valuation—image, speech and writing	"We were looking at The Lorax. The kids had to write a book review and ask: What is of value in the book?"

Table 12. *Sample Findings Teacher Interviews: Attitude Categories*

Teachers shared that the enactment of pedagogical content within the classrooms was highly engaging, and the students' learning gains in term of the multimodal application of affect, judgement, and appreciation language was "incredible". They shared that students demonstrated newly developed abilities to communicate using all the categories of the appraisal framework.

Data gathered from the teacher interviews enriched the findings about students' positive learning experiences and use of affect, judgement, and appreciation across modes and media. For example, teachers explained:

- "Their writing has improved a lot since they've been doing this. If you look at their writing from last term, as opposed to now, they've used that emotive language and more intense words."
- "Learning to use the power of the multimodal image, the project has helped children grow enormously, in representing judgements, ethics, and how it's expressed and shown multimodally; a big learning trajectory…"

Teachers spoke of students' growing pride and confidence to use systems of evaluative meanings in the creation of multimodal texts: "You could just see the students' pride and learning. The children learned a great deal." Teachers also recalled students' use of the metalanguage of the attitude network in discussing the design of multimodal texts. The teachers' responses confirmed that the teaching of the appraisal framework offered students a system of semiotic resources to express attitude clearly, particularly through the combination of affect, judgement, and appreciation in the multimodal media productions.

The results from this research indicated that teachers' new knowledge of and confidence in using the appraisal framework by Martin and White informed pedagogy. Teachers infused appraisal into aspects of English teaching to develop students' knowledge and multimodal expressions of attitudinal meanings through digital compositions and media.

3.6.5

Teacher Blog Posts

Teacher blogs, using the Learning Place Ed Studio (2 x 20-minute posts per teacher) were used to promote connectivity between teachers, supporting the face-to-face interaction in the professional workshops and in-class support. The key themes from the blogs were coded and analysed for repeated themes to understand:

a. how teachers articulate a knowledge of the appraisal framework; and

b. how teachers build students' knowledge of this framework and taught its application in multimodal designs.

Teachers shared that they developed new understandings of attitudinal grammar, identified areas that required further support in knowledge of attitudinal grammar, and gave evaluative feedback on classroom lessons.

Teacher Blog Post Findings

Findings from the teacher blogs provided further insight that teachers successfully infused the appraisal framework into pedagogy through strategies for developing students' understanding and representation of the grammar of emotion, judgement, and appreciation across different modes and media. For example, teachers shared in the blogs that teaching enhanced students' abilities to analyse, understand, and express emotional states and judgement of characters. The teachers planned and implemented learning experiences such as book reviews of characters; viewing animated shorts; classroom discussions; and joint construction of sentences.

Teachers also shared personal knowledge of attitudinal categories, such as affect, in the blogs. Some examples of what teachers posted in the blogs to express knowledge of different intensities or degrees of affect are:

"I could represent happiness directly using words, such as: 'I felt absolutely overjoyed or thrilled.' This example shows a high intensity of emotions. I could show a reduced intensity of happiness using a phrase such as, 'He was feeling glad'."

"I could indirectly show unhappiness by using words such as, 'The boy ambled slowly up the path with his shoulders slumped and a vacant look on his face'."

"I could represent satisfaction directly using words, such as: 'He was delighted with the outcome from today's discussion.' This example shows a high intensity of emotions."

"I could indirectly show dissatisfaction by using words such as, 'The boy folded his arms tightly and gave the teacher a stern glare as he marched off swiftly in the opposite direction'."

These teacher blog accounts exemplified how the teachers were committed to gaining high levels of knowledge of attitudinal language, and focused attention on learning and teaching multimodal metalanguages of attitudinal meanings using digital media.

4. Results and Implications

4.1

Enhanced Abilities to Communicate Attitudinal Meanings Multimodally

The findings indicated that students enhanced their abilities to communicate various grammars of attitudinal meanings multimodally as speech, writing, images, gestures, and sound, and as relating to the application of the appraisal framework.

4.1.1

Multimodal Expressions of Attitude in Digital Comics

Here are example pages of comic strips created by students using the Comics Head application via an iPad. In the first example, this author presents motion lines on and around the character's body to represent body shaking (trembling). The frames in Figure 10 show that the character's face depicts mixed feelings of apprehension, happiness, and worry.

This example shows how students applied gestures, such as an extension of arms in a vertical position in frame two, to indicate excitement about viewing the money. Written text expresses the character's dilemma about taking or leaving the money. Here appreciation is achieved through the image with the character looking directly at the bank notes hanging from the green ATM.

The following comic strips (Figure 11) also depict how students deployed multimodal resources in judgement (moral dilemma) narratives that they selected from the Comics Head app.

This student used the following techniques in the comic frames above:

- Exaggerated facial expressions;
- Gestures (hand positions);
- Posture (arms by side, hands on hips, trunk straight and slumped etc.);
- Front or side view, and positioning to indicate social distance (enlarging or minimising figures for close-up, mid-shot or long-shot); and
- Speech bubbles containing spoken words of characters.

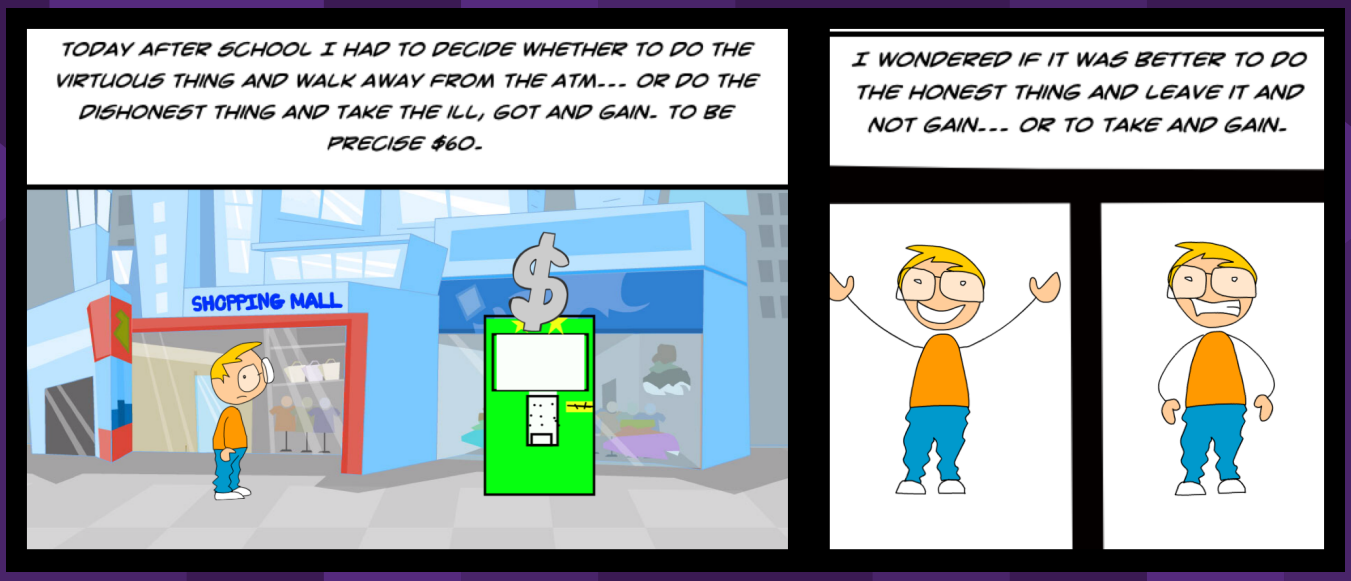


Figure 10. Attitudes communicated multimodally.

Figure 11. Judgement of propriety communicated

4.1.2

Multimodal Expressions of Attitude in Digital Animations

The example below illustrates how students communicated attitudinal meanings in the digital animation drawings in multimodal ways, including through writing, gesture, image, and sound.

The multimodal elements of the task provided an entry point for this student to create imaginative scripts about appreciation of Japan. The student successfully showed a positive appreciation of Japan through intermodal portrayal of image, colour, body posture and movement, facial expression, and written text. All comics produced by the students used a wide range of multimodal techniques to inscribe or evoke meanings of appreciation.

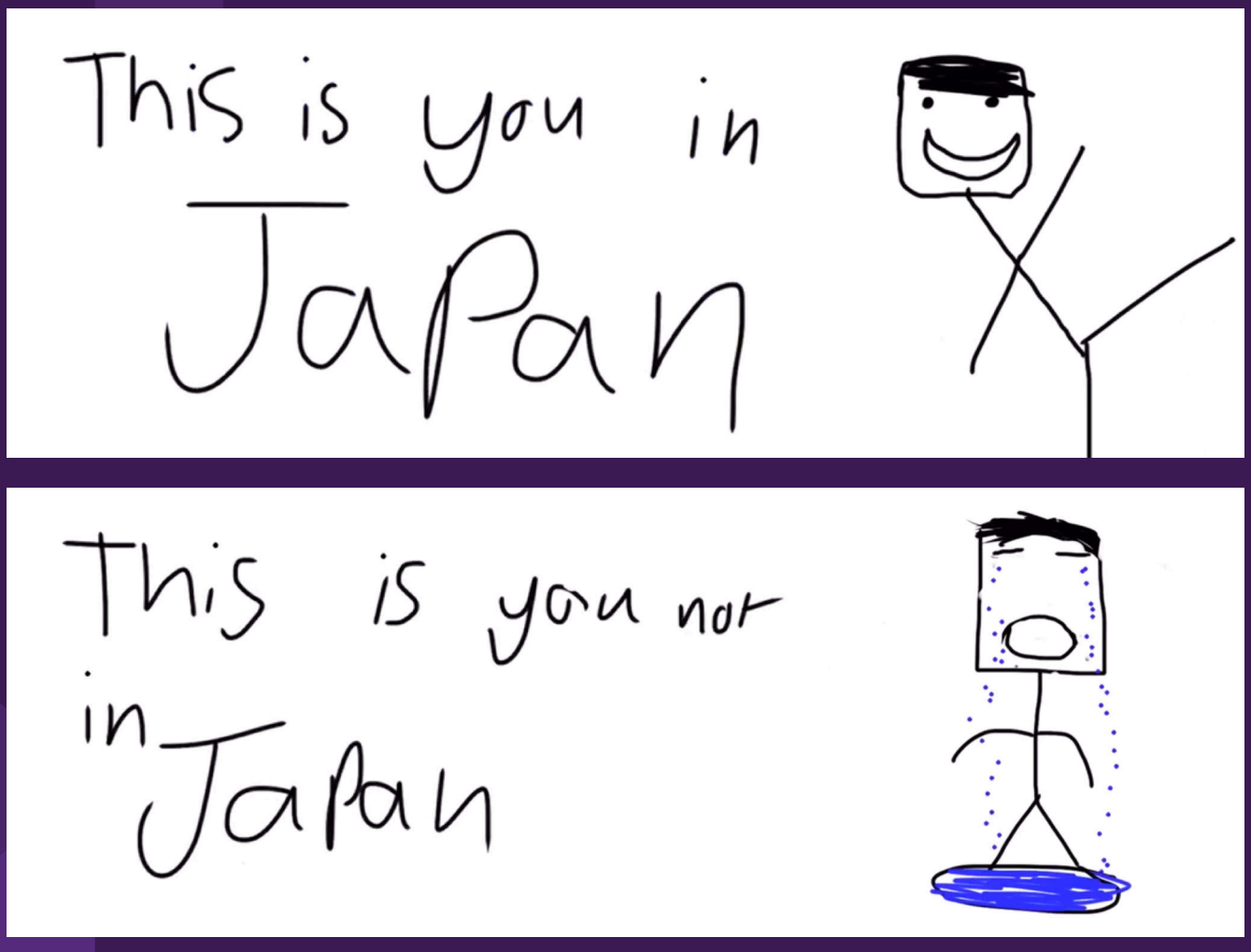


Figure 12. Multimodal appreciation of Japan

4.1.3

Multimodal Expressions of Attitude in Digital Images

Digital image composition was an important form of multimodal text creation for depicting attitudinal meanings: emotion, judgement, and appreciation. Students demonstrated new knowledge of how to control and apply the formal multimodal elements of digital imagery to communicate meanings about emotion, judgement, and appreciation:

- Lighting and shadows;
- Position and size of subjects in relation to each other and the viewer;
- Facial expressions;
- Gestures;
- Body language;
- Movement;
- Props;
- Backgrounds and special effects;
- Shot type (e.g. close-up, medium, long shot); and
- Colour

The images below were created by students who participated in the Big Picture Industries Inc visual literacy development programs.

The following image (Figure 14) shows how students used facial expression, body language, and gesture to express attitudinal meanings.

Figure 13. Attitudinal through facial expression, body language, and gesture © Mills, Unsworth, and Williamson, 2019.

Figure 14. Appreciation through shot type © Mills, Unsworth, and Williamson, 2019.

Students used props and close-up shots to communicate appreciation (positive reaction to things). Here the author uses a "front on" view to gain the viewers' attention to the image of a school brooch.

Students also learned to express appreciation of the natural environment by using a macro lens of a camera, a tripod, and lights which allowed them to take pictures of things using close-up shots. Appreciation meanings were communicated through digital images of small natural objects such as leaves, small rocks, and wild flowers from within the natural environment.

Figure 15 shows how students captured images to convey positive appreciation (aesthetic) meanings through pictorial qualities, such as rich and vibrant colour, and close-up shots. Students learnt to communicate beyond words to convey meanings about appreciation through visual design elements such as image and colour.

The project demonstrated how inequities in literacy education can be reduced for learners of English by developing repertoires for multimodal expression to achieve success in educational context where English is the language used to communicate attitudinal meanings. These findings have implications for teachers seeking to broaden students' and their own attitudinal language knowledge through the adoption of modal resources (such as, speech, images, writing, gestures, and sounds). Teachers can support students to develop attitudinal expressions in multimodal ways through self-authored texts such as digital comics, digital animations, and digital imagery.

Figure 15. Appreciation though colour and shot type © Mills, Unsworth, and Williamson, 2019. Not for reuse.

4.2

Expanded Vocabulary to Express Attitudinal Meanings Across Multiple Media

Students were introduced to the wide range of vocabulary to show gradients of meaning that can be used when we talk or write about affect, judgement, and appreciation. Figure 16 displays a sample of gradients of vocabulary that students used to express affect.

Students expanded their vocabulary and used degrees of intensification for expressing emotion, judgement, and appreciation through self-authored texts such as posters, digital animations, digital comics, film trailers, and letters.

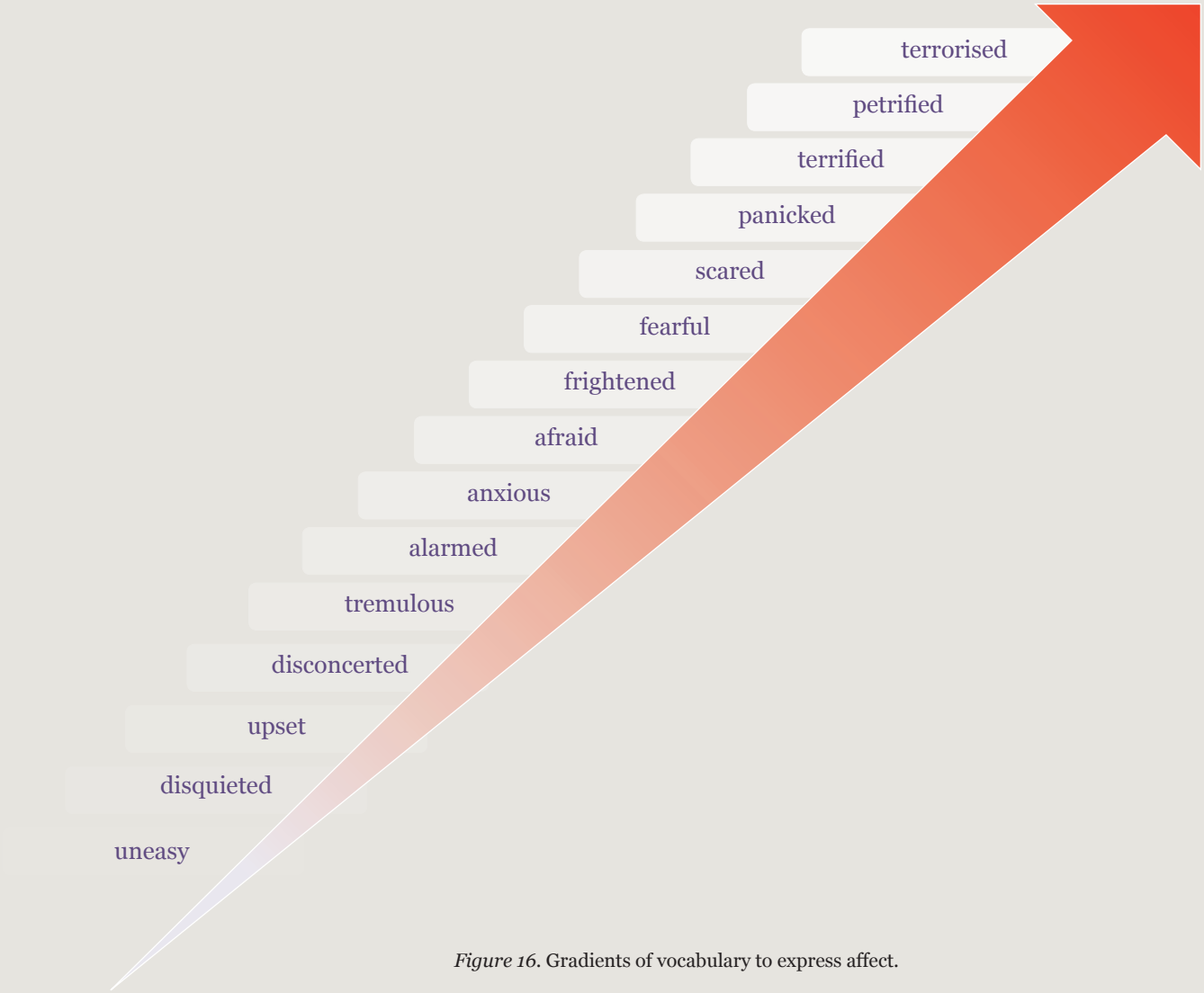


Figure 16. Gradients of vocabulary to express affect.

4.2.1

Expanded Vocabulary through Poster Design

Teachers supported students to develop their vocabulary through attitudinal expressions in posters through the following activities:

- Discussed rhetorical devices—pathos (feelings), logos (facts), ethos (expert)—used to express attitudinal meaning;
- Using handouts with sentences asked students to identify rhetorical devices used in the sentences and words/phrases that were used in sentences to persuade affect (emotions), judgement (ethics), and (appreciation) reaction to things;
- Showed students example advertisements and posters for students to discuss target audiences and identified the aims and messages in poster advertisements;
- Instructed students to analyse the effectiveness of posters for communicating intended meanings;
- Assisted students to write posters as a class and in groups; and
- Allowed students to choose topics to write their own persuasive poster.

Figure 17 shows examples of how students expanded their vocabulary to communicate attitudinal meanings and engage readers persuasively through modal elements of posters.

These posters show how students expanded their vocabulary by choosing to use words that would convince their parents and carers to let them get new pets. Students also enhanced their vocabulary as they used words to influence the viewer's position on affect ("hope"), judgement ("trustworthy"), and appreciation ("amazing").

Figure 17. Expanded vocabulary through posters

I really hope you let me keep the griffin!

If you let me keep it he can fly me to school and home so you don't have to do **ANYTHING!**

The Griffin will be able to play with our dog Buster for Hours so he isn't lonely.

He will be able to do yard work instead of Dad doing it .

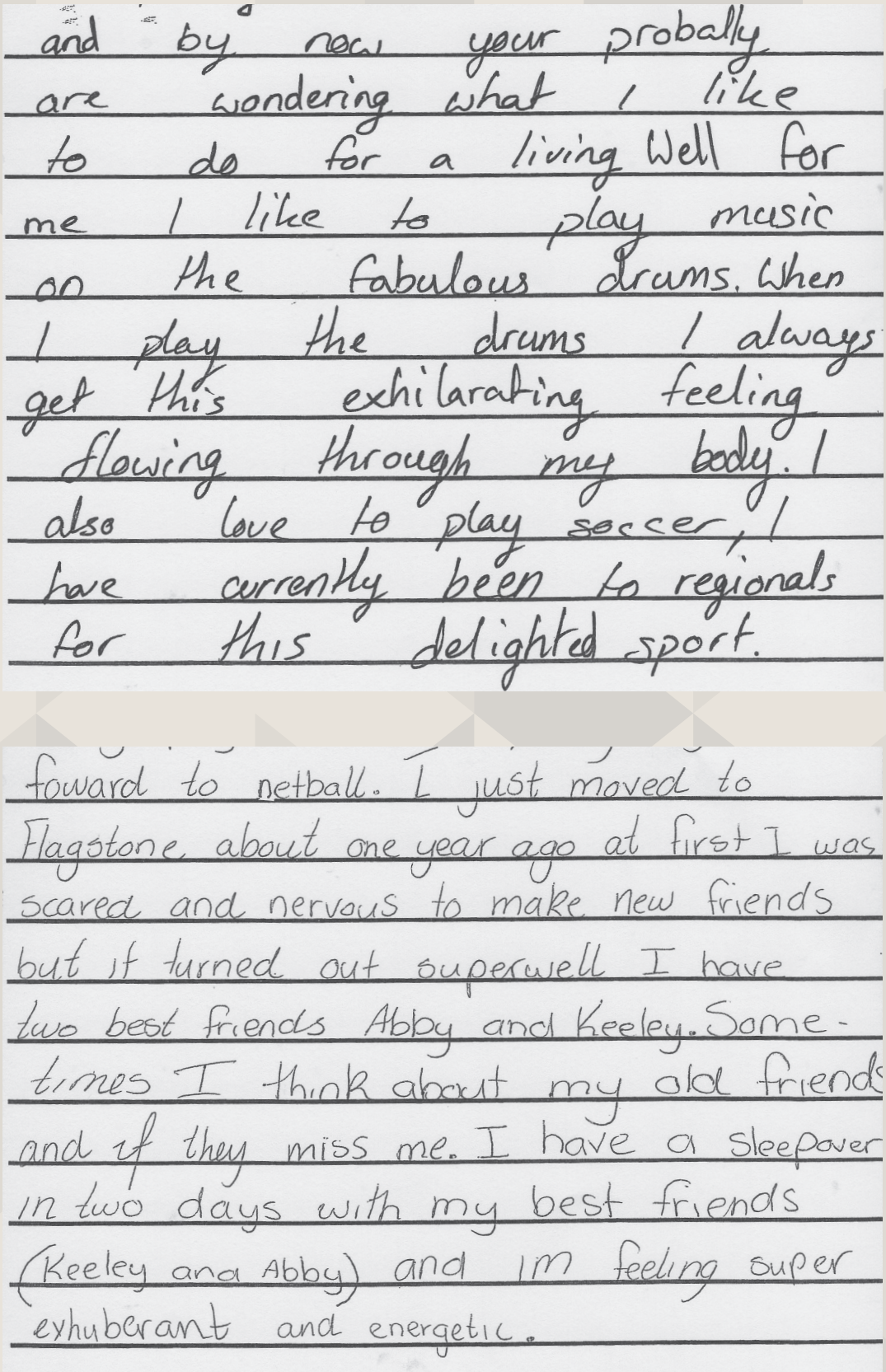
I really hope you let me keep the Griffin after hearing all my amazing points.

4.2.2

Expanded Vocabulary Through Letter Writing

Students expanded their vocabulary through the use of attitudinal grammar in letter writing activities. The teachers modelled how to use the grammar, and students applied this language in the writing of letters to their future selves. Students wrote about their future selves and about things that they hoped to change in times to come. They participated in discussions about introductions used in classic letter writing formats, and about world events, modern technologies, themselves, their friends, families, pets, interests, hobbies, and homes. They discussed the emotion, judgement, and appreciation feelings that they intended for their audience to feel. Here are two examples of letters that students wrote to expand their vocabulary of attitudinal grammar.

In these letters, students used non-core vocabulary to disclose personal feelings, thoughts, and dispositions to communicate attitudinal meanings. In the first example, Coby used the phrase "exhilarating feeling flowing through my body" to share the feelings he experienced when he played the drums (exhilarating). He also expressed a high level of positive affect and appreciation through his love of playing "the delightful sport" soccer. In the second example, Charlotte expressed intense feelings about her new friends and an anticipated event "exuberant and energetic". and "At first I was scared and nervous". These findings show how students can represent all three axes in the attitude network—affect, judgement, and appreciation—across multiple modes and media, such as through written narratives and letters.



and by now your probally are wondering what I like to do for a living Well for me I like to play music on the fabulous drums. When I play the drums I always get this exhilarating feeling flowing through my body. I also love to play soccer, I have currently been to regionals for this delighted sport.

foward to netball. I just moved to Flagstone about one year ago at first I was scared and nervous to make new friends but it turned out superwell I have two best friends Abby and Keeley. Sometimes I think about my old friends and if they miss me. I have a sleepover in two days with my best friends (Keeley and Abby) and im feeling super exhuberant and energetic.

Figure 18. Expanded vocabulary through letters

4.2.3

Expanded Vocabulary: Student Interview Responses

Evidence of students' expanded vocabulary for expressing attitudinal meanings across multiple media was repeatedly confirmed in the student interviews. Some examples are:

- Students provided non-core vocabulary to describe how they showed varied degrees of happiness in the films and suggested words such as "delighted" and "enthused".
- Students made judgements about characters in the self-authored texts using a large repertoire of non-core vocabulary, such as "passionate, evil, trustworthy, enthusiastic, and unique".
- Students used appreciation terms to communicate positive reaction to things and events included "engaging, flawless, and impressive". Students also voiced words such as "fake, insignificant, and worthless" to express negative evaluation of things.

State-wide educational policies should attend to the prioritisation of continued development of students' vocabulary and digital skills through a range of digital media, as mandated by the *Melbourne Declaration on Educational Goals for Young Australians* (2008), and addressed by the National Curriculum (ACARA, 2018).

4.3

Taught A New Appraisal System to Express Attitudinal Meanings

The project developed—for students from low socio-economic backgrounds—a shared metalanguage for student-peer discussion of the deployment of the evaluative and multimodal resources when dealing with affect, judgement of characteristics and capacities of people, as well as appreciation of the aesthetics and significance of phenomena. The teaching of the appraisal framework offered students a system of multimodal resources to apply and express knowledge of grammars of attitudinal meanings in self-authored texts. Students developed their abilities to communicate attitudinal meanings through the interpersonal language of the appraisal framework in multimodal ways, including speech, writing, gesture, image, and sound. They explored affect, judgements, and appreciation through multimodal texts for children, such as comics, or through media, such as film.

4.3.1

A New System of Appraisal: Student Interview Responses

Students were able to articulate without prompting or assistance, the system of affect, judgement, and appreciation meanings from the appraisal framework. Here are some examples of student responses that refer to the metalanguage describing the attitude categories:

- Emily explained that judgements can be "negative and positive judgements about behaviour: if they're doing a moral thing or an immoral thing (social sanction), or a capable or social thing (social esteem)".
- Olak made direct reference to the metalanguage of the systems of attitudinal meaning expression students had learned: "It was very nice using this app creating our own characters and using different expressions to show them how they feel, and affect, judgement, and appreciation."

These and similar findings suggest that students can benefit from opportunities to understand the metalanguage of appraisal across a range of modes and to appeal to the audience through multiple of digital and non-digital media.

4.3.2

A New System of Appraisal: Teacher Interview and Blog Responses

During the interviews, teachers spoke of students' growing confidence to use systems of attitudinal meanings in the creation of multimodal texts and students' use of the metalanguage of the attitude network. According to the teacher participants, a key benefit of the project was that within three weeks of engaging in the lessons the students had gained "richer" resources across attitudinal categories. Teachers voiced that the pedagogical content was highly engaging, and that students' multimodal text creations were "enriched through this learning". Teachers also reported that the students' learning gains in term of the multimodal application of attitudinal language were "incredible". The systematic analysis of the students' work samples demonstrated students' abilities to communicate using all categories of the appraisal framework. Other examples about student engagement from the teacher interview responses are:

"... we were doing cartoons on the ethical dilemma and we're saying, well, what's wrong with that? They're saying, 'Oh, it needs more judgement, or it needs more language of affect."

"We brought it into the English program, pre-teaching first, the appraisal framework, being explicit about the multimodal grammars."

These findings highlight that teachers can embed appraisal into curriculum designed with digital and non-digital authoring techniques and complementary multimodal expression of attitudinal meanings and evaluative views.

Findings from the teacher blogs show that teachers were instrumental in developing students' knowledge and application of the appraisal framework. Teachers shared in blog posts how they supported students to creatively and consciously harness the multimodal meaning potentials of multiple texts to inscribe and invoke attitudes in writing and digital communication. The teacher blogs highlighted insights into how teachers consciously and creatively embedded appraisal and elements of appraisal categories into English teaching. Teacher blog entries included commentaries such as:

"[We] looked at media again with a portion of the movie 'Jurassic Park' which brought out quite a lot of emotion. We spoke about how the actors displayed the emotions of being brave/fearful, confident/nervous etc., and then went onto looking at how the movie made the audience feel."

"The students and I discussed the different degrees of happy and came up with—quietly content about a situation, pleasantly pleased about the work, very amused, exceptionally cheerful, absolutely ecstatic."

"The word unhappiness was discussed in the introduction of this sentence. The child felt that it was inappropriate to laugh during this extremely upsetting and solemn event. Inferring the type of event that would be very unhappy to attendants because of the level of modality associated with the word upsetting/solemn … Our joint construction included these—incredibly disappointed, utterly miserable, really sad and then slightly glum."

The findings show that students applied new knowledge of the appraisal framework to express meanings about positive and negative attitudes.

These results in this study showed that all students improved significantly in the knowledge of the metalanguage of attitudinal meaning. Similarly, all students were able to provide examples of different categories of attitudinal expression, as evidenced in the interview responses and blog entries. There are implications for teachers to support student multimodal creation of digital texts to communicate real-life emotion, judgement, and appreciation meanings to emphasise interpersonal meanings—such as happiness, capacity, and valuation—within formal and informal educational contexts. Young students can be supported to communicate evaluations of affect, judgement, and appreciation in digital text construction to enhance knowledge and use of language that is necessary for everyday communication, social relations, and emotional success.

4.4

Developed Teacher Knowledge of The Appraisal Framework

This study significantly impacted pedagogy as a means of teacher personal knowledge acquisition about multimodal grammars and confidence in the theoretical knowledge of the appraisal framework of Martin and White (2005). For example, teachers personally invested time and resources to develop knowledge and confidence of using multimodal grammars by reading recommended grammar texts and sharing this information with other teachers. Teachers went beyond the introduction to the appraisal framework provided by the research team, to a detailed personal study of the pedagogic application of the framework in the book by Humphrey et al. (2012). The development of teacher knowledge and teacher confidence in the theoretical knowledge of the appraisal framework was reflected in interview comments including: "We were trying to understand it ourselves. So that's when we got that Grammar and Meaning book."

Each school in this research played a crucial role in supporting teachers to become more informed, skilled, and confident to implement the appraisal framework into the English curriculum. For example, school principals provided both time and resources for knowledge sharing among teaching teams within the schools. This implementation broadened student use of multimodal semiotic resources to communicate attitudinal meanings across varied modes and media.

4.4.1

Enhanced Pedagogical Confidence and Knowledge: Teacher Responses

Teacher interview responses provided further insights into how teachers developed knowledge and confidence of using the appraisal framework to inform pedagogy to enhance students' repertoire of multimodal resources for expressing attitudinal meanings in self-authored texts. Teachers shared comments about this enormous "learning trajectory":

"We definitely have a better understanding of the language of evaluation loved doing—judgement, appreciation, and affect, all three."

"I've loved doing it. It's enabled us as a cohort to take this on and enrich it, develop it, and produce learning."

"It was effective for me to make new connections, to help my understanding and then help the students to build bridges to use affect in words, images, and across different modes."

These findings have implications for teachers seeking to broaden students' as well as their own attitudinal language knowledge through the teaching and application of emotion, judgement, and appreciation through a leading system of appraisal in English.

The project demonstrated how teachers and school leaders can achieve professional development through collaborative engagements with industry partners for school-based curriculum planning and the evaluation and assessment of multimodal literacy in the enactment of the Australian Curriculum: English. For example, the findings are instrumental for teachers and principals who seek support to build pedagogical capacity and to implement the National Curriculum: English requirement for students' expert creation of emotionally engaging texts and sophisticated multimodal expressions of ideas (ACARA, 2018 [ACELA1429, ACELA1435]). Teacher knowledge and instruction in contextualised grammar has more positive outcomes for students to become more abled writers (Myhill, Jones, & Wilson, 2016).

Researchers who aim to expand and deepen the attitudinal knowledge of educators and their repertoire of language resources could adopt and adapt the classroom interventions from this research model in new fields of research. The research findings are instrumental to shape state-wide educational policies pertaining to the prioritisation of continued development of teacher knowledge of multimodal communication as a key cornerstone of literacy learning in schools.

5. Recommendations

5.1

Recommendations for Practice

RP1.	RP1. Teachers are encouraged to use a range of modes (gesture, facial expression, body
RP2.	movement, speech, writing, images, and sound) to yield strong student language growth. RP2. Teachers are encouraged to use multiple media including film, dramatisations, popular
RP3.	animations, digital comics, posters, and letters to teach emotional expressions, and to model and
RP4.	develop high-quality strategies for attitudinal language.
RP5.	RP3. Teachers can explore new ways to enhance children's academic achievement and emotional
RP6.	wellbeing through the multimodal communication of emotion, judgement, and appreciation
RP7.	across other digital media platforms, such as film design, virtual reality, and video games. RP4. Teachers can use guided instruction in digital design and explicit teaching of attitudinal
RP8.	language by experts outside of schools.
RP9.	RP5. Teachers are encouraged to use the M3E cycle as an innovative approach to teach attitudinal
RP10.	language that apply non-verbal, visual, gestural, spatial, and other modes of communication in popular texts and dramatisations to strengthen students' language skills for evaluative and attitudinal expression.

Multimodal expressions of attitudinal meanings are required in contemporary communication. A multimodal metalanguage can equip students to gain conscious control of self-authored texts across modes and media (Smith, Pacheco, & de Almeida, 2017). Developing sophisticated ways of expressing attitude is vital in high quality writing, and for strong performance in writing tests such as NAPLAN. Student engagement in multimodal and digital literacy is necessary for future workforce innovation and can increase productivity, and impact health, wellbeing, and social mobility in the long term (Organization for Economic Cooperation and Development,

2013). Advanced communication skills are also associated with increased social cohesion, reduced crime, and lowered welfare costs (Wolfe & Haveman, 2002). Teachers are encouraged to advance students' knowledge of attitudinal meanings through digital ways at a time when technologies are having a monumental impact on the workforce, so that current generations of Australian students can compete in the digital environments of the global economy.

This research has demonstrated teacher commitment to gaining high levels of knowledge of attitudinal grammars and a broadened understanding of communicative modes for appraisal. This project generated a pedagogical model—M3E cycle—for teachers to optimise students' broadened expression of attitudinal meanings. Teachers can use this model to implement the appraisal framework integrated with the pedagogy of multimodal composing through digital authoring software and across a range of media.

Teachers can be supported to develop metalanguage that aligns with the key objective of the multiliteracies initiative "to develop an educationally accessible functional grammar; that is, a metalanguage that describes meaning in various realms" and that does not make "unrealistic demands on teacher or learner knowledge" (New London Group, 2000, p. 24). The current study provides an exemplar for teachers to commit to learning and teaching multimodal metalanguages of attitudinal meanings, with broadened resources for achieving expert communicative work in digital times.

5.2

Recommendations for Whole-School Approach

RWS1. Schools can develop novel pedagogical approaches for teachers to enhance students' abilities to express attitudinal meanings through multimodal resources in other areas such as haptic, sonic, tactile, olfactory, and other senses.

RWS2. Teachers, year-level coordinators, heads of curriculum, deputy principals, and principals are encouraged to address whole school planning to integrate dimensions of the appraisal framework in English and literacy curriculum and pedagogy.

RWS3. Teachers, year-level coordinators, and heads of curriculum are encouraged to extend assessment rubrics to include specific criteria to address attitudinal language in the students' multimodal writing.

Pedagogical approaches to teaching an appraisal framework within digital and multimodal contexts need to be extended to all levels of schooling. The implementation of a whole-school approach is significant for the sequential and cohesive development of students' increasing levels of work in multimodal attitudinal grammar, beginning from the early years through to high school. Teachers and principals are encouraged to build pedagogical capacity through a whole-school approach to implement the National Curriculum: English requirement for students' expert creation of emotionally engaging texts and sophisticated multimodal expressions of ideas (ACARA, 2018 [ACELA1429, ACELA1435]). Within the context of a whole-school approach students across all curriculum levels can be taught to recognise new digital and non-digital ways through which emotion, judgement, and appreciation are conveyed and influenced in expression.

5·3

Recommendations for Collaborative Partnership

RCP1. Long term partnerships with educational stakeholders are needed to build community connections and collaboration, for example, with schools, visual media experts, universities and policy makers, for enhanced student long-term social and emotional outcomes.

RCP2. Researchers, teachers, year-level coordinators, heads of curriculum, deputy principals, and principals are encouraged to use collaborative approaches with industry professionals and universities for professional development in the learning and teaching of appraisal framework through in-class support, modelled lessons, and curriculum planning meetings.

This project used a collaborative partnership approach to develop professional and student knowledge and application of 21st century literacy skills that are required for sophisticated attitudinal expressions across a range of media. Effective collaborative partnership not only provided access to specialist knowledge in digital media design literacies and pedagogical support in the enactment of visual literacy development programs. This approach contributed to teacher personal confidence and professional development.

Educational systems that invest in collaborative approaches with policy makers and industry partners increase professional capacity to develop student economic and social outcomes from the early years to adulthood (Hargreaves & Fullan, 2013). A collaborative approach is recognised as a core requisite for positive attitudinal (moral) change in postmodern society (Fullan, 1993).

5.4

Recommendations for Policy Makers

RPM1. Education decision making bodies can apply the research findings to develop students' abilities to use the main categories of attitudinal meanings in language—emotion, judgement, and appreciation for better social and economic outcomes.

RPM2. Legislators of educational policies are encouraged to apply new pedagogical approaches from this project to strengthen teachers' pedagogical practice to enhance students' demonstration of growth in the application of multimodal grammar knowledge attitudinal meanings.

RPM3. Policy makers are encouraged to address students' literacy needs through innovative pedagogical and collaborative approaches with researchers, universities, and industry and community partners.

The project extended knowledge of multimodal communication that is central to international and national policy formation regarding curriculum, and addressed students' social and academic skills, and emotional wellbeing (ACARA, 2018; Stein, 2012). The research findings can be used to advance international education action plans for equipping children with digital skills that are afforded by multimodal technology. The national curriculum elaborates student outcomes for developing "digital skills" 981 times and "multimodal outcomes" 287 times, beginning from the foundation year of school and extending to year 10 (ACARA, 2018).

The findings from this research can be optimised to impact state education policy to develop new pedagogical approaches for strengthening students' attitudinal language across all levels and across multiple modes and media. Success in literacy learning for students lies in policies that prioritise opportunities for student use of digital media to communicate, and to marshal and expand the power of technology to create new knowledge for expressing feelings, creativity, and productivity (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008; Organization for Economic Cooperation and Development, 2016).

6. Conclusion:

Implenting the Appraisal Framework in a Digital Age

This project enhanced students' abilities to express feelings in multimodal ways across child-centred learning environments as addressed in the National Curriculum: English—"Language for interaction" (ACARA, 2018). In doing so, it increased the power of multimodal resources for those who live with economic adversity. Innovative approaches—self-authored comics, film, digital animations, digital images—were used to broaden student understanding and expression of attitudinal grammar for enhanced social-emotional wellbeing, therefore targeting a national strategic goal to "maximise social and economic participation in society" (ACARA, 2018).

This study developed and demonstrated a pedagogical approach for the English curriculum—The M3E cycle—to enable teachers to assess and advance students' capacities to appropriately incorporate attitudinal meaning into multimodal text creation. The project created successful awareness and application of the research outcomes beyond the project schools to teachers from other schools in the region through project training, research dissemination events and publications, and via media releases to the public. The research outcomes impacted other teachers, principals, and school administrators, and policy makers to use the research results for student learning and teacher training.

6.1

Keys to Building Students' Interpersonal Language Skills

Develop effective approaches and strategies for embedding explicit teaching of attitudinal expressions across curriculum for enhanced student social-emotional wellbeing.

- Teach new appraisal systems to express attitudinal meanings (for example, Martin & White, 2005).
- Involve lead teachers to become catalysts to distribute new learning about multimodal literacy to advance learning, social, and emotional outcomes of students from disadvantaged backgrounds.
- Recognise and support ongoing teacher professional development to enhance the grammar of emotion, judgement, and appreciation across different modes and media with students who are socially disadvantaged.
- Implement whole-school approaches with progression for students' increasing levels of work in multimodal attitudinal grammar.
- Identify ways to modify assessment rubrics to include multimodal ways for appraisal.
- Identify approaches to increase collaborative partnerships between universities and schools, and connections with industry partners with shared aims to advance multimodal literacy outcomes of other students who are from disadvantaged backgrounds.

7. Appendix:

Publications from the Project

7.1

Scholarly Book Chapter (Peer Reviewed)

Mills, K. A., Unsworth, L., & Barton, G. (2019). The digital mediation of emotions in late modernity. In R. Putulny, A. Bellocchi, R. Olson, S. Khorana, J. McKenzie, & M. Peterie (Eds.), *Emotions in late modernity. Routledge Studies in the Sociology of Emotions*. London, UK: Routledge/ CRC Press.

7.2

Refereed Journal Article

Mills, K.A., & Stone, B. (Conditionally accepted). Students' Multimodal Communication of Opinion in Film and Video Media. *Research in the Teaching of English*.

Related conference presentation

Mills, K.A. (2018, April). The Multimodal Language of Emotions in Early Adolescent Book Trailers. In AERA Annual Meeting 2018: *The Dreams, Possibilities, and Necessity of Public Education*. American Educational Research Association, New York.

Mills, K.A., Stone, B., Unsworth, L., Friend, L. (2020). Multimodal Language of Attitude in Digital Composition. *Written Communication, 37*(2), 135–166. doi: 10.1177/0741088319897978

Mills, K.A., & Unsworth, L. (2018). iPad Animations: Powerful practices for adolescents' multimodal literacy and emotional language. *Journal of Adolescent and Adult Literacy, 61*(6), 609–620. doi:10.1002/jaal.717

Related conference presentations

Mills, K.A. (2018, July). *iPad Animations for the Multimodal Communication of Emotions*. Paper session presented at the ARLE Conference, SIG Technology and Literacy Education, Lesbos, Greece.

Unsworth, L., & Mills, K. A. (2020). English language teaching of attitude and emotion in digital multimodal composition. *Journal of Second Language Writing*, 47, 100712, 1–17. doi: 10.1016/j.jslw.2020.100712

Related conference presentation

Unsworth, L. (2019, July). *Developing students' repertoires for expression of attitudes and emotions in digital multimodal authoring*. Paper session presented at the Australian Literacy Educators Association Conference, Melbourne, Victoria.

7·3

Additional conference presentations

Mills, K. A. (2016, September). What children's photography can teach us about affect, judgement and appreciation. Paper session presented at the Australian Systemic Functional Linguistic Association Conference, Australian Catholic University, North Sydney, N.S.W.

7·4

Showcases

Mills, K.A. (2015). Why students' multimodal language of emotions matters. In Department of Education ARC Research Symposium, Brisbane, Qld.

Mills, K.A. (2018). Making iPad Animations: Teaching the Multimodal Language of Emotions in a High-Tech World. In Institute for Learning Sciences & Teacher Education Symposium 15 November 2018, 32 Hickory Street, Marsden, Qld.

Unsworth, L. (2018). Students' learning of metalanguage in extending their repertoires for expressing attitude through language and image. In Institute for Learning Sciences & Teacher Education Symposium, Marsden, Qld.

For non-peer reviewed research output including links to students work samples, media outreach, news, and events please visit the Selfie website:

https://wordpress.com/page/selfieresearchproject.wordpress.com/13

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