

Questioning art: Factors affecting students' cognitive engagement in responding

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The *Melbourne declaration on educational goals for young Australians* (MCEETYA, 2008) cited confident and creative citizens as a key goal for Australian students. This goal aligns with global research on visual arts, specifically visual literacy. Being visually literate means decoding images, understanding the relationship between image and context, and recoding personal experiences into visual artworks. This learning is a core outcome of responding activities in secondary school visual arts. However, students will only develop visual literacy skills if they are engaged in their learning activities. Subsequently, this research sought to explore the cognitive engagement of students in the Year 11 visual arts course. The research utilised a mixed methods approach, which aimed to measure factors affecting student engagement. Quantitative measures of student engagement are rarely subject specific, and the creation of a quantitative visual arts diagnostic instrument gave information about students' engagement that could inform teacher instruction. Factors affecting students' engagement were determined through exploratory analysis of the diagnostic assessment instrument, with qualitative data used to explain the students' quantitative responses. Three key factors of cognitive engagement were determined: intrinsic motivation, metacognition and autonomy. Developing students' skills in these areas may improve their cognitive engagement in their visual arts education.

Introduction

Students are expected to be competent at both making (practical work) and responding (analytical work) in senior school visual arts courses (School Curriculum and Standards Authority, 2015). This is evidenced in the 50/50 weighting between the making and responding strands of the WA curriculum. While students often prefer the practical component of the course, it is important that they understand how visual artworks and artefacts promote the transmission of cultural knowledge and discourse (Wilson, 2011); for example, from the Aboriginal cave paintings of the Northwest of Western Australia (WA) to the contemporary of *iPad* drawings by David Hockney recently exhibited at the National Gallery of Victoria. In the curriculum, students learn about culture through critically analysing artworks as well as researching artists and art history (School Curriculum and Standards Authority, 2015). Students then apply this knowledge within their own art practice, by appropriating and building on the work of artists who inspire them (School Curriculum and Standards Authority, 2015). The cyclical nature of responding to artworks and then applying this knowledge to one's own art practice is consistent with the definition of visual literacy, to decode and encode visual text (Avgerinou & Petterson, 2011; Flood, 2004; Westraadt, 2016). A visually literate individual can participate actively in visual communication as they have the skills to both make meaning from and contribute to meaning-making within culture. However, if students are not engaged in both aspects of visual arts they may diminish their literacy.

The Australian Government has prioritised developing visually literate individuals as it is one goal of the *Melbourne declaration* (MCEETYA, 2008). The Melbourne Declaration set out goals for education that support the “vital role [schools play] in promoting the intellectual, physical, social, emotional, moral, spiritual and aesthetic development and wellbeing of young Australians, and in ensuring the nation’s ongoing economic prosperity and social cohesion” (MCEETYA, 2008, p. 5). Included in these goals are to develop “creative and confident individuals, and active and informed citizens” (MCEETYA, 2008, p. 8). Creative individuals are those who are innovative and creatively active, and who build empathy through creativity. These individuals can engage with visual texts as part of their creative ability. Active and informed citizens can communicate within and between cultural groups, and this relies on more than just language literacy. Individuals who can decode and encode visual texts have an additional literacy on which to develop an understanding of the world across cultures and to use this knowledge to interact with others in a productive and culturally sensitive way (Freedman, Heijnen, Kallio-Tavin, Karpati & Papp, 2013; Palmer, 2015).

This research aimed to measure students’ engagement in the responding aspect of visual arts, the component of the visual arts curriculum most closely linked to visual literacy. Students can only develop as visually literate individuals if they are deeply engaged in their learning. A second aim of the research was to explore quantitative methods within visual arts. Quantitative instruments measuring student engagement in visual arts have not yet been created, and hence working towards validating a diagnostic tool that can improve teacher intervention in this area is significant. The research was conducted during the final two years of the WA visual arts course of study, which was replaced by the WA visual arts ATAR (university-pathway) course in 2015. An explanatory mixed methods study was conducted to diagnostically assess students’ cognitive and psychological engagement in visual arts responding tasks. Follow-up interviews were conducted with Year 11 students to triangulate and add richness to the quantitative findings. This paper reports on students’ cognitive engagement, in response to the research question: *To what extent are Year 11 students engaging with visual arts responding tasks?*

Defining visual literacy as a construct

The role of visual arts in preparing students to engage with visual culture in contemporary society can be linked back to Dewey’s perspective that the visual arts form part of the life-world construction, as artworks are created from and by human experience (Dewey, 1934). Furthermore, visual arts brings cultural understandings together with technical skills in an authentic way (Dewey, 1906). In contemporary society, students’ interactions in the life-world are entwined with visual-based media, such as computer applications, still photographs, print media, film and television, social media applications and videogames (Fetherston, 2008; Palmer, 2015; Wilson, 2011). Even in the early 2000s, Atkins (2002) stated that “the social application of new technological knowledge ... has led to profound changes in our daily practices of literacies” (p. 35). In this often digital space, students need to be aware that “visual texts – just like written and spoken texts – are constructed using a range of conventions” (Atkins, 2002, p. 37). They need to understand that culture

is constructed through visual images that project certain social values that promote or subvert hegemonic ideologies (D'Alleva, 2012; Duncum, 2010). They also need to understand that digital texts cannot replace authentic experience; for example, a digital image of the artwork is not the same as standing in front of (or walking around) an artwork (Flood & Bamford, 2007).

Visual literacy is the skill of negotiating visual culture and communication. It can be defined as the ability to decode and encode meaning from visual texts (Avgerinou & Petterson, 2011; Flood, 2004). A key aspect of visual literacy is that it is both reactive and productive, in that individuals both make meaning as a result of exposure to external visual stimuli, as well as through producing their own visual texts that contribute back to visual culture (Avgerinou & Petterson, 2011; Black & Browning, 2011; Westraadt, 2016). Visual literacy is unique from language literacy in that there are no set rules for reading an image (Flood, 2004; Freedman, 2010) – they often cannot be read from left to right, or from beginning to end. However, there are frameworks that have been developed to assist students to ask and answer questions that can lead them to decode the artwork. These frameworks vary in complexity, but generally begin with literal comprehension questions (such as, what do you see?), then lead to inferential questions (such as, what colours do you see and why do you think they have been used?), move to applied questions (such as, what is the artist's intended message?) and finish with an evaluation (such as, make a judgement about the image). While frameworks can assist with types of questions to ask, the student plays an integral role in the construction of meaning from an artwork and their interpretation will be unique to their own life-world (Flood, 2004).

Responding in the Western Australian visual arts curriculum

Visual literacy has been a clearly defined aim of the WA visual arts curriculum since 1984, when it became accepted in the Tertiary Entrance Examinations list (Lummis, Morris & Lock, 2016). At this time, a written examination that assessed students' ability to recognise images and to write analytically about them was implemented in the visual arts course (Boughton, 1989; Lummis et al., 2016). Currently, students who study visual arts in Year 12 complete both a practical and a written examination. As a result of the written examination, responding has been made a key strand within the visual arts curriculum. In the WA visual arts curriculum, *making* refers to all practical work that students complete and *responding* refers to all of the theoretical and written work that they complete (School Curriculum and Standards Authority, 2015).

From 2008-2014, the senior school curriculum was termed the visual arts course of study. In this curriculum students' responding tasks were organised into two areas: analysis and investigation. In the analysis area, students were given one or two images and asked to complete a critical analysis of the images, using a framework to guide their discussion. In an assessment setting the images for this task were often unseen and students completed their analysis under test conditions, in preparation for the Year 12 examinations. The investigation component generally consisted of an artist case study report. Students would research an artist who interested them, and who would be a key influence for their own

art making. They would present a biography of the artist and their context, as well as completing an analysis on one or more of their artworks.

From 2015 the visual arts senior school curriculum has been updated. This curriculum is called the visual arts ATAR course, and this course still prepares students to sit the university entrance examination for visual arts. The fundamentals of responding in the curriculum have not changed from the visual arts course of study; however, the terminology of the curriculum units in Years 11 and 12 has changed to be more consistent with other Australian states and with the WA curriculum for Years K-10 that is aligned to the Australian curriculum.

Defining cognitive engagement

There is no single definition for student engagement or for types of engagement, and there is also no single instrument to measure engagement (Fredricks, Blumenfeld & Paris, 2004; Greene, 2015; Lovelace, Reschly, Appleton & Lutz, 2014; Mazer, 2012). In attempting to measure this latent construct, researchers generally concur on four types of student engagement (Furlong & Christenson, 2008). In the *Student Engagement Instrument*, Appleton, Christenson, Kim and Reschly (2006) termed these four types of engagement as: academic, behavioural, cognitive and psychological. Academic and behavioural engagement refer to shallow engagement factors, such as whether students appear on-task during lessons and how often they attend school (Fredricks et al., 2004; Furlong & Christenson, 2008; Morris, 2014). These types of engagement are more easily measured because of their observable indicators; for example, a student's attendance can be observed and recorded. Cognitive and psychological engagement refer to deep engagement because they imply advanced knowledge acquisition, in which students demonstrate their ability to apply knowledge to develop personal understandings of the life-world (Efland, 1990). These types of engagement are more difficult to measure as they cannot be observed and rely on self-report; for example, students engaged in writing about art can be applying knowledge from a range of subjects to the current task, while simultaneously metacognitively processing where they need to fill gaps in their knowledge to complete the task. This neural processing is unobservable by the teacher.

In this study, cognitive engagement was defined as students' perceptions of the extent to which they engaged with visual arts responding tasks, in terms of relevance to their everyday life-world. Cognitive engagement was defined as having three latent indicators: autonomy, intrinsic motivation and metacognition. Autonomy was defined as the internalisation of information and processes, and their integration with student identity (Inguglia, Ingoglia, Liga, Lo Coco & Lo Cricchio, 2015; Ryan & Deci, 2006). Autonomous student are those who make decisions about learning in relation to their beliefs and interests (Winchmann, 2011). Intrinsic motivation was defined as students' motivation to learn for knowledge, achievement and sensory experience (Abeysekera & Dawson, 2015; Carbonneau, Vallerand & Lafrenière, 2012). Motivated students want to learn because they find the subject or task inherently interesting, and feel their learning is beneficial to their life and identity construction (Carbonneau et al., 2012; Ryan & Deci, 2000).

Metacognition was defined as “the act of monitoring cognitive performance” (Wiley & Jee, 2011, p. 6). The most common types of metacognition are knowledge of self, task knowledge and strategic knowledge (Tarricone, 2011). Knowledge of self refers to students’ awareness of their goals, strengths and areas for improvement (Garrison & Akyol, 2015; Tarricone, 2011; Wiley & Jee, 2011). Task knowledge refers to awareness of the objectives of the specific learning task, while strategic knowledge refers to the method used to complete the learning and any adaptations to the method that may be required (Garrison & Akyol, 2015; Tarricone, 2011).

Methodology

While a pragmatic paradigm is often used in mixed-methods research (Morse, 2003), this research employed the complementary strengths thesis. Although the complementary strengths thesis has been criticised for mixing research paradigms that have potentially conflicting epistemologies (Creswell, 2014; Hall, 2013), this research employed an explanatory mixed methods approach in which the qualitative data collection followed the quantitative. Consequently, it was appropriate for the researcher to apply differing paradigms to each phase of the data collection in order to best address the research questions. The quantitative phase of the research employed a post-positivist paradigm, as the purpose of this phase was in response to the question: How effectively can students’ cognitive and psychological engagement be measured in visual arts responding tasks? This question required the researcher to look at the measurement of engagement, based on “tentative speculation in which multiple perspectives and multiple warrants are brought forward by the researcher” (Cohen, Manion & Morrison, 2011, p. 27). In developing a measurement scale for cognitive engagement factors, the researcher required the “conventional benchmarks of ‘rigor’” (Guba & Lincoln, 2000, p. 170) upheld by post-positivism to guide the testing and re-testing of the questionnaire until it was suitable for validation testing with the sample.

The second phase of the research sought to elaborate on the findings of the quantitative analysis through qualitative data collection. In this phase, the researcher sought to respond to the question: To what extent are Year 11 students engaging with visual arts responding tasks? This phase employed constructivism, a paradigm that directly contrasts the worldview of post-positivism, in that it accepts there are multiple realities that are constructed through social interaction between researcher and participant (Creswell & Plano-Clark, 2011). A key component of constructivism is that it utilises “a social setting to understand the meaning of participants’ lives in their own terms” (Janesick, 2000, p. 382). This paradigm was appropriate for the second phase of research as the researcher sought to triangulate the findings from the quantitative analysis, to determine if the lived experiences of the Year 11 students was consistent with the questionnaire findings and where their experiences differed from (or were not captured by) the questionnaire. A key aspect of this phase of the research was respecting the life-world and *sense of being* of the students (Habermas, 1999; Heidegger, 1996). A questionnaire cannot adequately capture the unique contexts of each student participant, and the interview phase allowed for the researcher to construct a clearer picture of reality for each student.

Method

The research study employed an explanatory mixed methods design (Punch, 2009). In an explanatory design, “first-phase quantitative results guide the selection of subsamples for follow-up in-depth qualitative investigation in the second phase” (Punch, 2009, p. 296). In this study, the aggregate data were analysed from the online questionnaire, and then one-on-one interviews were conducted with the Year 11 students, visual arts teachers, department leaders for the arts, and principals. Interviews with the students and teachers were conducted on the school grounds, while department leaders and principals were interviewed over the telephone. The focus of this paper is to report on the Year 11 student findings from both the questionnaire and interviews in relation to the factors affecting their cognitive engagement in visual arts responding tasks. As such, the subsequent section of the paper focuses on the procedures that the student participants completed within this study.

Participants and procedures

A total of 147 Year 11 students enrolled in Stage 2 visual arts units participated in this study during 2013 and 2014, the final two years in which this curriculum was taught in WA. These students are generally 15-17 years of age, and the Stage 2 visual arts unit represents students who wish to complete the Western Australian Certificate of Education (WACE) examination for visual arts in Year 12. The students represented all three school sectors (Catholic, government and independent) and were from Perth metropolitan schools with an *Index of Community Socio-Educational Advantage* (ICSEA) value between 900-1200. The ICSEA value was developed by the Australian Curriculum, Assessment and Reporting Authority (ACARA) as:

Research shows that there is a strong relationship between the educational advantage a student has, as measured by the parents' occupation and level of education completed, and their educational achievement ... developed to enable fair and meaningful comparisons ... of students in a given school with that of similar schools serving students with statistically similar backgrounds ... (ACARA, 2012, p. 2)

The characteristics of the sample were important due to the piloting of the online questionnaire. To improve the instrument's reliability it was necessary to have a sample that represented a broad range of school contexts and students. Within the sample, 137 completed an online questionnaire developed by the researcher. The online questionnaire took approximately 20 minutes to complete and was conducted during class time. The questionnaire asked the students about their experiences in visual arts from the home context and their schooling up to Year 11, including their engagement with responding tasks in visual arts. The researcher remained in the classroom during this time to answer any questions the students had, and to support any information technology issues that arose while the class was logged-in to the online questionnaire. Most students completed the questionnaire on a school issued device (laptop or *iPad*), but for two classes the researcher brought along a class set of *iPads* that could be used to access the survey if

students did not have a school issued device. All responses to the survey were recorded anonymously.

The remaining 10 students in the sample participated in a semi-structured interview with the researcher, to elicit further information about their engagement in responding tasks. These interviews were conducted in a private location on the school grounds, in either the Arts staff office or in an unused classroom space. The interviews lasted approximately 20 minutes. They were audio recorded and transcribed, with all identifying information removed prior to data analysis. Data collection and analysis were conducted until the research themes reached saturation. All students were given a pseudonym for data analysis and reporting to protect confidentiality.

Measures

The Year 11 students completed the *Visual Arts Responding Student Engagement Instrument* (VARSEI), developed by the researcher. The VARSEI (full version) consists of five sections and is modelled on the *Student Engagement Instrument* developed by Appleton et al. (2006). The key difference with the VARSEI is that it was developed specifically for responding, to counter the measurement problem that “many measures do not link engagement to a target task or source ... this creates confusion for the respondent and muddies the interpretation of engagement findings” (Greene, 2015, p. 21). The sections of the VARSEI are:

- A. Demographic information;
- B. Personal interest in visual arts;
- C. Primary school visual arts;
- D. Middle school (Years 7-10) visual arts;
- E. Year 11 Stage 2 visual arts.

The first four sections contain nominal items that provide context for Section E of the questionnaire. Section A contains demographic information so that the overall sample characteristics could be defined. Section B includes questions about students' visual arts practice outside of school, both in terms of making art and responding to it. This section also includes items about family interest in visual arts, such as ‘do you and your family talk about art at home?’ Sections C and D include items about students' school experiences, such as if they had a specialist visual arts teacher or what historical art movements they have studied. The final section of the questionnaire, Section E, contains items related to students' engagement in their Year 11 Stage 2 responding tasks. This section measures factors affecting engagement in both the cognitive and psychological domains. A total of 15 items measure cognitive engagement factors, across the three indicators of autonomy, intrinsic motivation and metacognition. These 15 items were measured using a six-point Likert scale: strongly disagree, disagree, slightly disagree, slightly agree, agree, and strongly agree. While the measurement aspect of the VARSEI is not reported in this paper, a further validation study of the instrument will be reported in a subsequent publication.

As an explanatory mixed methods approach was used, the interviews were conducted to elicit additional information based on the questionnaire and to also triangulate the questionnaire findings. As such, an interview guide was developed from the emerging findings. The interview questions followed a similar structure to the questionnaire, moving from students' personal experiences of art through to how they felt about responding tasks. The subject of personal experiences and interest in visual arts was used as an icebreaker to build rapport with the students.

Findings

The factor analyses conducted on the VARSEI questionnaire reported three key factors related to students' cognitive engagement: autonomy, intrinsic motivation and metacognition. A Cronbach's alpha reliability test was conducted to confirm the factors retained. Intrinsic motivation and metacognition both had high reliabilities, Cronbach's alpha = 0.85 and 0.84, respectively. Autonomy had a slightly lower reliability, Cronbach's alpha = 0.73; however, as it was above the 0.70 value often used in psychology and education research (Cohen et al., 2011; Drost, 2011; Kline, 1991) the scale was considered reliable.

Table 1 shows the mean scores and key themes for each of the three factors measured, which are then explained in more detail, with additional evidence from the student interviews.

Table 1: Summary of mean scores and themes for engagement factors

Factor	Mean	Standard deviation	Key theme
Autonomy	3.45	0.70	Trust in the art teacher to select 'better' works for analysis.
Intrinsic motivation	4.85	0.96	Deep interest in learning about art/artists.
Metacognition	4.70	0.79	Dependency on the Internet for contextual information.

Autonomy

Autonomy had the lowest mean of the three cognitive engagement scales. The interviewed students' comments were consistent with the quantitative findings, particularly for specific items within the autonomy scale of the questionnaire. The highest mean in this scale was for the item *I am responsible for my own learning* (M = 4.84, SD = 0.89). It appeared that students felt they were accountable for their learning; however, they did not feel autonomy in other aspects of the Stage 2 visual arts course. The lowest mean score for an item was 4.36 (SD = 1.14), given for the item *I make decisions about what artworks I want to view*. This item measured students' perception of control and self-determination related to the visual arts course content. The interviewed students stated that they did not often choose the artworks and artists that they studied. In relation to choosing artworks, Adrian suggested that teachers needed to decide what students would study as "there's just so

much art. It's distracting." Mario had another perspective, and felt his teacher "picks the images to be more controlling ... so we don't go too [far] off subject." While both of these students felt the teacher had to have control of content selection, also implying that students could be easily overwhelmed by the breadth of artworks to study, Isabel offered an alternative perspective. Isabel spoke about the consequences for her learning if she had autonomy over the course content:

If we get to make the decision [about artists or artworks to view] we just go to what we feel comfortable with. If we see that something has got a lot in it to analyse, then we would obviously choose it over something that doesn't [or that has a more hidden meaning]. So it's good in that way, but it's bad because we dodge the ones that we're weak at. So we don't really progress that much.

Isabel's perspective could explain the lower scores within the autonomy scale. Her perspective suggested that the students may feel positively about the level of autonomy that they do have, which could be described as being responsible learners within the boundaries of content that is directed by the visual arts teacher.

Another aspect of autonomy was between the making and responding aspects of visual arts. While the questionnaire showed students tended towards agreeing with the statement, *I view others' visual artworks to influence my own visual arts practice* ($M = 4.71$, $SD = 1.05$), Adrian suggested his autonomy was evident more in making artworks rather than in responding to visual arts. Adrian explained how "other people try to look at other people's art for inspiration. I always forget to bring my laptop, so I can't look up stuff in class. I never look at other people's art ... definitely [I'm original]." Adrian felt autonomous in his art making, and he defined this autonomy as being able to detach himself from being influenced by external sources. It is possible that some disparity occurred between the quantitative and qualitative data as students may have compared their sense of autonomy in making versus responding to visual arts when completing the self-report questionnaire.

Intrinsic motivation

The intrinsic motivation scale had the highest mean score of the cognitive engagement scales. The quantitative and qualitative data were consistent for the intrinsic motivation scale. Collectively, the students expressed a deep interest in experiencing visual artworks, as evidenced by the high mean ($M = 5.05$, $SD = 0.79$) for the item *I enjoy experiencing new artworks*. The interviewed students felt that knowing a range of artworks was "just good to know." Adrian discussed the enjoyment he received from being able to challenge artists' intentions through analysing artworks, "writing about other people's art is kind of fun, because you can make fun of the artist." For Adrian, the thrill of being the *critic* engaged him to respond to visual artworks.

Most students felt motivated to continue visual arts alongside other creative pursuits when they completed compulsory schooling. This showed a deep motivation and enjoyment of the subject. Bridget explained how she was motivated to be creative although "not

necessarily [pursue a career] in visual arts [as an artist. I think] that would be more of a fun [hobby] thing for me. I would write though, I like writing.” Like Bridget, the quantitative responses revealed that students were interested in maintaining an arts practice but not as a career. The lowest mean score in this scale was for the item *Studying visual arts theory will help me in the future* ($M = 3.99$, $SD = 1.22$). Of all the interviewed students, Adrian had the most emphatic reaction to careers in the visual arts. He exclaimed: “Not as a career ... because it doesn’t pay that much, not unless you’re famous or something!”

Despite the reaction against a career in the visual arts, intrinsic motivation to respond to art was high from both art making and general knowledge perspectives. Elizabeth summarised the comments of many students when she said, “to develop your techniques and improve yourself as an artist you need to understand the foundation of art.” Frida echoed the importance art history providing a general knowledge about the world, “I think it’s just knowledge. Knowing how things changed and how the different art movements occurred and what [contextual factors] changed that – I like knowing that.”

Metacognition

There was a high range of scores across the four items of the metacognitive scale. In further investigation, it seems the specific items in the scale could have affected the range of scores for metacognition. These items were:

1. When I see a visual artwork I know what to do to understand its meaning;
2. When I see a visual artwork I know what knowledge I will need to analyse it;
3. I know where to get information I need to help me analyse visual artworks; and
4. I can explain how different techniques influence the meaning we make from visual artworks.

These items refer to different types of knowledge required in metacognitive thinking, including self-knowledge (item four in the above list), task knowledge (items one and two), and strategic knowledge (item 3) (Tarricone, 2011). Therefore, it is possible a student perceives stronger skills in one type of knowledge compared to another; for example, students may think they have good self-knowledge and task knowledge and respond highly on these items, but be unsure about sourcing information to fill gaps in their knowledge, so respond with a lower score for strategic knowledge.

The highest mean score for an item in this scale was 4.46 ($SD = 0.99$), for the task knowledge item *When I see a visual artwork I know what knowledge I need to analyse it*. This indicated that the students had a good understanding of the types of information they needed to include when analysing an artwork, and was unsurprising given the number of analysis frameworks that are frequently used within visual arts classrooms throughout schooling. However, the lowest mean score was for the other task knowledge item *When I see a visual artwork I know what to do to understand its meaning* ($M = 4.26$, $SD = 0.99$). The interviewed students spoke about the initial confrontation that comes from having an unknown artwork placed in front of you and being asked to interpret it. Each student had a different strategy for how to begin their analysis, with most students focusing on formal

analysis first (identifying colours used, types of line, patterns, etc.) as a way of then moving to a more symbolic and analytical reading of the work.

Strategic knowledge was relatively low on the questionnaire ($M = 4.38$, $SD = 1.01$); however, this was not supported in the interviews conducted with students. The interviewed students spoke a lot about technology dependency, and how this strategic knowledge compensated for their poor content knowledge. Adrian laughed, “I know nothing pretty much! But I can just look ... [any information] up if I want to know it.” While the Internet provided information that could help students to complete responding tasks, it also posed its own issues. Frida explained how the breadth of information on the Internet overwhelmed her, “I can’t make up my mind on one thing to do [after all my Internet searching].” Damien had similar anxiety about choosing artworks to study because of “the amount of artworks out there. Finding one that’s really sort of challenging, but not too hard, or just ... one that has been done by a well-known artist, but that is also relevant to the topic [is challenging].” The students were not talking about strategic knowledge within the task itself, but about the initial selection of artworks and artists that would help them to begin their tasks with the confidence that there was enough information in sources to support their learning.

In addition to these reflections on metacognition within responding tasks, some interviewed students also spoke about the links between making and responding to art. Elizabeth summarised the sentiment of the students and explained how completing responding tasks led to an increased self-awareness in her art making:

I will admit that maybe two years ago I wasn’t thinking about artwork in terms of how it was constructed, and I wasn’t really thinking about my work in terms of how it was constructed, but more if it [was] accurate ... I wanted to paint or draw an accurate representation, like something realistic, but now it’s more like, how can I just capture the light or just use tone to represent and not [any] line, ... [I focus on] different techniques and ... elements to create the image, not just making it look realistic.

Elizabeth’s reflection identified that metacognition crossed tasks, and that students were acutely aware that skills learnt through one task could be applied to others within the course.

Perceived skills and knowledge

Within the discussions on autonomy, intrinsic motivation and metacognition, the interviewed students frequently referred to their skills and knowledge in visual arts responding. They could actively identify what they were required to know in order to excel at a typical visual arts responding assessment:

We looked at a brief biography of the artist, discussed their style of work, their influence and [other artists] they have influenced. Then we picked two pictures ... we dissected [them] and talked about how this theme has been influenced or relating it back to context. (Mario)

The interviewed students concurred that understanding the contextual knowledge of the artist's life and social conditions was the hardest component of visual analysis. The students were more comfortable with this type of task if they were given time to research the contextual information they needed; however, they were extremely anxious about examination situations that required them to use their existing knowledge to respond to an artwork. Cy explained being challenged in examinations:

It's kind of easy to pick out parts of the artwork [to discuss], but it's much more difficult to talk about the contextual information ... I don't revise context enough. And it's hard to be given an image you don't know and then talk about its context.

Helene elaborated on this challenge and the implications for students' achievement:

We had two pieces for compare and contrast, one was of a ... space thing and the other was, I think French Revolution ... I don't know anything about either of those ... I rambled.

As she missed such a large section of her response, Helene's marks on the examination suffered.

Perceived skills and knowledge was not an indicator of cognitive engagement; however, the frequency in which it arose in the interviews suggested that enhancing students' skills – particularly in the area of contextual knowledge – would improve their confidence in and enjoyment of responding to visual arts. While the students identified a need to broaden their context knowledge, they did not have strategies to do so in a way that engaged them.

Discussion

This study found that students did perceive they were cognitively engaged with their learning in visual arts responding. The findings showed four key areas for discussion: autonomy, intrinsic motivation, metacognition, and task relatedness.

Autonomy

The students were satisfied with the extent of autonomy of their learning, evidenced in their sense of accountability for their learning. This was consistent with the internalisation of information and processes discussed by Ryan and Deci (2006). While students felt they were responsible for their learning, they did not feel they had control to make decisions about their learning based on their beliefs or interests. This finding was consistent across both the quantitative and qualitative data. Although Winchmann (2011) referred to decision-making as a key aspect of autonomy, the Year 11 students in this study were satisfied with the level of control they did have. The interviewed students discussed how teachers' control over subject content in responding enhanced their learning, as it did not allow them to "dodge the ones [artworks] we are weak at" (Isabel). Isabel gave examples of how, if given the choice, students would be likely to select easier artworks to analyse

rather than challenging themselves to interpret more complicated works. By giving the teacher the power to make decisions about content, the students demonstrated a trust in the teacher to make selections that were varied and adequately prepared them for assessments.

Intrinsic motivation

Both the quantitative and qualitative data showed that students were deeply motivated to study art history and its application to their own arts practices. The sensory experience of enjoying new artworks was very important to the students, consistent with Abeysekera and Dawson (2015). The interviewed students spoke about the links between responding to art and their own making processes, and through this discussion demonstrated their visual literacy skills to encode or create imagery based on their understanding of visual text (Avgerinou & Petterson, 2011; Westraadt, 2016).

However, there was some disparity within the intrinsic motivation scale, where students were deeply motivated by the subject content, but were not willing to pursue visual arts or responding in their future. Some of the interviewed students spoke about maintaining an arts practice as a hobby, but there was a consensus that “you can’t live on an artist’s wage” (Adrian). In the students’ discussion about skills and knowledge they explained how motivation based on achievement was often low for visual arts responding. The key reason for this was their lack of context knowledge, which had a large impact on their achievement in examinations. When students feel they may not excel at a task, self-efficacy and motivation decreases (Carbonneau et al., 2012). It could be that self-efficacy and limited motivation for achievement impacted on students’ interest in pursuing visual arts as a future career. This could also be linked back to the lower sense of autonomy students felt they had within the course, and the extrinsic motivation of the WACE examination. Extrinsic motivators do not support deep engagement in the same way as intrinsic motivation (Abeysekera & Dawson, 2015; Ryan & Deci, 2000). Extrinsic motivators are not sustainable long-term, and students can still disengage from tasks if they perceive that they will not complete the task to a standard that would result in being rewarded (Abeysekera & Dawson, 2015; Ryan & Deci, 2000).

Metacognition

Metacognition rated highly on the quantitative data, but individual cases showed variance in the responses per item depending on the type of knowledge the item referred to. The interviewed students supported the higher scores for task knowledge, which is likely based on the quantity of scaffolding frameworks that are used to complete image analysis tasks for visual arts responding. As a consequence, the instrument may have inflated the positive response to this factor of student engagement.

However, the students reported disparate perspectives about strategic knowledge, and they explained how they relied on the Internet to provide information for their tasks and were anxious if there was limited web-based information on their subject content. At times the Internet itself posed a challenge to strategic knowledge, as students explained

being “distracted” (Adrian) by the amount of artwork on the Internet. This quantity of information and imagery made Internet searching overwhelming and made research tasks more challenging for the students.

It seemed that the students required explicit scaffolding for conducting digital research and could benefit from improving their digital literacy skills, particularly with the prevalence of digital technology use among adolescents (Patchin & Hinduja, 2010). Improving these skills for students may also be positive for their autonomy through strengthening confidence to make decisions about their learning. One strategy to achieve this aim could be to work collaboratively in self and co-regulation with peers, to support research and other tasks that students feel overwhelmed by (Garrison & Akyol, 2015). These types of strategies may support students' engagement overall, by strengthening multiple factors of engagement.

Task relatedness

While the quantitative data showed that students were cognitively engaged in visual arts responding, the qualitative data found some areas for improvement. A key issue for the students' engagement was relatedness. Relatedness is about links between the task and students' interests and aspirations (Carbonneau et al., 2012; Deci & Moller, 2007). Although not explicitly measured by the questionnaire, relatedness is evident in many of the items across the VARSEI cognitive engagement scales. Relatedness is essential, as research has “consistently showed the importance of perceived instrumentality (future consequences or future goals) as a motivation variable linked to cognitive engagement” (Greene, 2015, p. 21).

It seemed that the students in this study could make a link between the responding tasks and their own interest in art making, but did not link responding tasks to their future aspirations beyond schooling. Adrian went as far as to say that responding in visual arts was “just like English lit[erature]”. The school environment could also diminish relatedness, as the interviewed students often implied that the purpose of responding to visual arts was in preparation for the Year 12 WACE examinations. This shifts the purpose of learning from intrinsic to extrinsic (Deci & Moller, 2007), as the goal for responding to visual arts is to achieve in the examination and receive entrance into the students' preferred university course. For students to be truly intrinsically engaged, the process of learning needs to be caused by inherent satisfaction and enjoyment rather than by an external locus (Deci & Moller, 2007; Ryan & Deci, 2000).

Conclusion

This research investigated Year 11 students' perceptions of cognitive engagement in responding to visual arts. Responding is a key component of the WA visual arts curriculum as it facilitates the acquisition of visual literacy skills, or the ability to decode and encode visual information (Avgerinou & Petterson, 2011; Flood, 2004). Enhancing students' visual literacy is important because they live in an increasingly visual and digital world (Atkins, 2002; Fetherston, 2008; Westraadt, 2016; Wilson, 2011). However, visual

literacy through responding cannot be developed if students are not deeply engaged in their learning. Therefore, measuring student engagement in responding is one strategy to identifying where students can improve their engagement and how teachers can best support engagement. Being able to reliably and validly measure student engagement through a diagnostic tool is one strategy that could change teaching practice based on student evidence. This is important for teachers' reporting, and also in gathering evidence of the impact of teaching on students' engagement in learning.

The student sample for this study identified that scaffolding for digital research, and explicitly relating responding tasks to students' everyday lives and future aspirations could improve their cognitive engagement. This feedback from students can help teachers to plan and implement tasks that are related to students' needs. Subsequently, students become active participants in their own learning, developing as autonomous learners (Ryan & Deci, 2006).

Beyond diagnostically assessing students' cognitive engagement, this research also sought to demonstrate the positive outcomes of mixed methods research in the area of student engagement. The interviewed students showed where there were similarities, differences or additional information compared to the quantitative data. The explanatory approach strengthened the research findings, and is consistent with Greene's (2015) assertion that "combining the scales with interviews was a more robust method than scales alone" (p. 23). One limitation of the quantitative phase of this study was the small sample size ($n = 137$), and ongoing research to further validate the VARSEI with a larger sample is currently being undertaken. Furthermore, the VARSEI has only been trialled within a WA context, and would possibly require adaptation to make it valid for use on a broader international scale.

Student engagement in visual arts responding is important both for their academic achievement and future lives. Within the WA curriculum, responding is weighted as 50% of a student's overall grade for visual arts, and represents 50% of their WACE mark for visual arts. On a holistic level, responding to visual arts contributes to the students' acquisition of visual literacy, and this has an impact on their ability to make meaning from their life-world (Freedman et al., 2013; Westraadt, 2016). In a country that has prioritised the cultivation of "creative and confident individuals, and active and informed citizens" (MCEETYA, 2008, p. 8), visual arts education has a key role in engaging students to develop into active citizens within the visual, digital, and global life-world.

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