Using Sketch Notes in Higher Education Classrooms: Creating Visual Roadmaps to Foster Critical Thinking and Creativity

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Abstract

Developing the skills to scrutinise evidence in a critical manner and adopt varied perspectives are essential for success in the 21st-century workplace. This research focuses on moving from traditional text-based, time bound lesson plans to creating visual maps of the content for each class and the discussions etc that ensued. Instead of being a guide for the teacher alone, they were developed into a form of map for the whole session. This research involved two small cohorts of early childhood student teachers in the third year of their B.Ed (Early Childhood Teaching) degree. The methodology employed a qualitative approach through a survey of students about the impact of using sketch notes in class. A self-study autoethnographic lens was applied through the researcher's reflective journal. The feedback from the students in the survey showed that they found that the non-linearity of the maps made the content easier to understand. The deconstruction of each part of the content facilitated new connections to be made by the students. These two points had an impact on the cognitive load of the class as they found the content easier to understand in the deconstructed form. This research shows that the use of a mixture of the text and visuals included in sketchnotes is an important pedagogical tool that helps students retain information and explore the topic from a range of critical perspectives.

Keywords: sketchnoting, higher education, visual learning

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Introduction

Traditional lesson plans are typically text-laden documents designed to guide the teacher through the content in the available time. Houella (2022) suggests that the lesson plan "acts as a guide to the instructor on how to identify and deliver learning objectives for the class" (p. 2). In this sense, lesson plans are written *for the teacher*. However, in today's diverse classrooms with many different learning needs to bring about success, what if the lesson plan was also *for the student*? This project introduces the idea of visual lesson plans that were shared with the whole class and were used to organise learning around "chunks" of content. These maps were intended not only to support delivery but also to scaffold students' understanding, foster deeper engagement, and reduce cognitive overload.

Literature Review

Definition

This review explores sketchnoting as a multimodal strategy that supports understanding, engagement, and reflective practice, within a higher education context. Sketchnotes as defined by Rohde (2013) are a form of non-linear, visual note-taking that combines images and text to support individual sense-making (Csachová & Kidonová, 2022; Fernández-Fontecha et al., 2018). This involves listening to a lecture or discussion and visually mapping the ideas through symbols, connectors and key words (Tidy et al., 2022).

Visual literacy has become increasingly important in the 21st century with skills such as creativity, communication, collaboration, and critical thinking seen as essential (Kim et al., 2019). Sketchnoting, as part of visual thinking practices, helps foster these competencies. Brown (2014) refers to it as "thinking in disguise" (p. 5) where visual explanations make clear previously subconscious meaning-making processes. As Brown also notes "There is no singular definition of a doodle …only insight from what you make of it" (p. xv) a perspective clearly aligned with constructivist views of knowledge building.

Constructivist theorists such as Vygotsky and Cole (1978) and Bruner (1966) both describe the importance of social interaction in building on prior experience and constructing understanding. These ideas underpin the potential of sketchnoting to personalise learning while still supporting group engagement in interpreting and synthesising knowledge.

Theory

Sketchnoting involves a process of content synthesis by identifying key ideas and restructuring them into visual form (Tidy et al., 2022). Sketchnoting aligns with Dual Coding Theory (Paivio, 1986), which hypothesises that verbal and visual information about a topic are processed in parallel systems in the brain. When both are used together, deeper learning and stronger recall are reinforced.

Wooten and Cuevas (2024) confirmed the continued relevance of Dual Coding Theory over other more contested learning style models. Bi (2021), in his research with colour-impaired participants, considered that cognition is best supported when visual and textual ideas are used together. This explains why combining simple visuals with text can enhance comprehension and long-term memory.

Sketchnotes can bring to the surface connections between ideas that may not be immediately visible (Arzaga, 2023). Its non-linear format empowers learners to return to ideas, link concepts in different ways and set their own learning pace. As Rahayu et al. (2024) explain "Students benefit from a… nonsequential learning path, because it allows them to control the pace and sequence of their learning (p. 143)." The non-linearity of sketchnotes empowers students to take their time, ask for more information and drive their own learning. Paepcke-Hjeltness et al. (2017) and Kozárová and Duchovičová (2020) support this, noting how non-linear formats empower students to guide their learning process.

This project used sketchnotes not simply for recall, but to scaffold critical thinking, helping students break down complex topics and then reconstruct them with their own understanding. Csachová and Kidonová (2022) describe how visual strategies enable deconstruction and synthesis of ideas, essential to critical thinking. DeWaard et al. (2024) reinforce this, arguing that sketchnotes promote "deeper analysis, exploration, and discovery" (p. 33) by making thinking visible.

Challenges

There are, however, some challenges associated with sketchnoting. First, students often feel anxious due to the inferred connection with required artistic skill (Nørgaard, 2017). Addressing this concern requires clear framing that sketchnoting is not about artistic ability but about supporting thinking.

Second, there are also concerns about whether the simplification required in visual summaries may lead to loss of nuance or inaccurate representations (Irving-Bell & Hartley, 2022). Learners may inadvertently distort ideas when attempting to visualise them quickly. These challenges highlight the importance of scaffolding sketchnoting with critical discussion and reflection.

Contribution

While sketchnoting is becoming more common in educational practice, most studies focus on its role as a personal note-taking device. There is limited research on its use as a shared pedagogical tool**,** particularly as a visual lesson plan, in higher education. This study seeks to extend the field by exploring how visual mapping can scaffold cognitive processing, critical thinking, and non-linear reflection. It highlights the pedagogical value of using sketchnotes not only as a record of learning but as a *thinking tool* for constructing, revisiting, and analysing ideas.

Context

This research focused on using the sketchnotes process in creating lesson plans designed for both the teacher and students for two higher education classes in a B.Ed (Early Childhood Teaching) in Aotearoa New Zealand. Previous cohorts of students had found synthesis and critical thinking difficult, so the idea evolved of deconstructing class content into smaller elements and then reconstructing into overall knowledge that the students better understood. The idea was to use a combination of visual and textual content to chunk content in the lesson plans and on the white board or tablet, gather the subsequent student research findings and notes around the appropriate chunk. Each section would include deconstruction and

reconstruction of the concepts as well as overall synthesis of the information at the end. In this way, the lesson plan would become a visual roadmap of the class.

Design and Methodology

The research is informed by an interpretivist approach which works from the premise that all knowledge is constructed from experience and context. Pervin and Mokhtar (2022) suggest that "according to the interpretive approach, it is important for researchers as social participants to understand the differences that exit between people" (p. 421). This research focuses on how each individual student used the collective sketchnotes on the whiteboard to make sense of the content for themselves.

In addition, the research was also informed by constructivism which posits that knowledge is actively built through experiences and interactions with their social and cultural communities (Vygotsky & Cole, 1978).

Finally, Dual Coding Theory (Paivio, 1986) informs the research. It supports the addition of both visual and verbal elements as key components of meaning-making, and explains how the combined use of images and text can reduce cognitive load and enhance understanding.

The study sought to answer the following research question: Can sketchnotes integrated into lesson plans increase sense-making and understanding for early childhood student teachers?

To explore this, a qualitative approach was used. Students were invited to complete a short, anonymous survey at the end of the semester. Two open-ended questions were asked:

1. In what ways (if at all) has this approach aided you to understand the class content better?
2. Are there particular parts of the text–visuals approach that you found particularly helpful for your understanding? Why was this so?

Findings and Discussion

Thematic analysis of the student survey responses revealed seven core themes. These are presented below as *Themes*, followed by a *Discussion* that interprets the themes in light of relevant literature and theory.

Themes

Clarity and Content Simplification

Students indicated that the visual layout of the lesson plan helped simplify complex content and provided an immediate sense of the session's structure.

"It has made it more understandable."

"Only takes one glance to get an overview."

"It has really helped me to understand my course better."

Visual Learning Preferences

These responses reflect a preference for materials that combine textual and visual elements, supporting diverse ways of learning and remembering.

“Being a visual learner, I like seeing what we were going to do in the session.”

“I am a visual learner. I can remember contents better when pictures are used alongside text.”

Visual Memory and Transfer

Students associated the visual layout with improved memory retention and transfer to assessment tasks.

“I can remember contents better when pictures are used.”

“It has helped me visualise the things I am planning to write for my assignment.”

Positive Emotional Engagement

Students expressed emotional and motivational benefits, linking enjoyment and positive engagement with visuals to deeper understanding.

“I genuinely enjoyed the visuals.”

“The visuals have definitely got me more engaged.”

“It helps me to understand better and it’s easy to revisit again and again.”

Reducing Cognitive Load

Students described feeling more in control of the content, suggesting that the visual structure helped reduce their perceived complexity.

“It makes it less overwhelming.”

“It doesn’t feel daunting like it's an impossible work level.”

Visual Flow and Sequencing

These comments reflect the value students placed on clearly sequenced content, enabled by visual features like arrows, containers, and spatial layout.

“I like it when it’s in boxes with arrows pointing from each point to the next.”

“Separated into easy to achieve steps.”

Revisitability, Aesthetics, and Joy

This theme highlights the emotional, aesthetic, and practical appeal of sketchnotes, especially in supporting repeated review.

"The mind maps have helped… easier to revisit again and again."

"The doodles are very good! Pleasing to the eye haha…"

"I genuinely enjoyed the visuals, where I could assess what points were going to be covered."

Discussion

The themes identified in the findings reflect a strong alignment with the theoretical frameworks guiding this study.

Clarity and Simplification

These were key benefits described by students, aligning with Fernández-Fontecha et al. (2018), who argue that sketchnotes help reduce complexity by breaking information into accessible chunks. The design elements helped students access the "bigger picture" from the outset, giving shape to the content in a memorable way.

Visual Learning Preferences and Memory and Transfer

These connect directly to Dual Coding Theory (Paivio, 1986), which proposes that the brain processes visual and verbal information through separate channels. The students' comments clearly suggest that using both together supported better retention and understanding. Camporro and Marquardt (2020) reinforce this, highlighting how the two-channel processing enhances recall. Gansemer-Topf et al. (2021) add that dual coding can also foster communication and problem-solving, both of which are vital in reflective teaching and assessment tasks. Watching collaborative sketchnotes unfold visually enabled students to personalise the material and connect it to their own contexts (Tidy et al., 2022).

Positive Emotional Engagement

The students' comments included enjoyment, confidence, and the desire to revisit the material. This aligns with Dimeo's (2021) findings that well-designed visuals improve re-read value, motivation, and recall. Fernández-Fontecha et al. (2018) also highlight the emotional benefit of using non-linear visuals to support calm, focus, and exploration. It also connects clearly to the affective elements of constructivist thinking (Taber, 2015).

Cognitive Load

This was another key area where students found the sketchnotes helpful. The format of boxes, arrows, and white space helped reduce overwhelm and made the content feel more achievable. This supports DeWaard et al. (2024) argument that sketchnotes offer a "mental model" for learners to follow, reducing perceived difficulty and improving clarity.

Flow and Sequencing

The responses show that learners valued visual elements like arrows, layout, and progression that reflect what Kress and van Leeuwen (2020) refer to as "visual grammar." Lewis et al. (2023) further support this by linking visual organisation to learner comprehension and confidence.

Revisitability and Joy

This final theme reflects the deeper engagement and ownership sketchnotes made possible. The visual appeal of doodles and the simplicity of mind mapping concepts encouraged students to return to their notes, supporting long-term learning. Baff (2020) explains how these visual summaries contribute to deeper cognitive imprinting: *"*I will remember how it looks on the page" (p. 221).

Conclusion

Although this study was small in scale, several clear conclusions have begun to emerge.

First, sketchnotes supported students' sense-making by helping them deconstruct and follow complex content more easily. Chunking information and visually organising it using containers, connectors, and deliberate spacing enabled students to clarify their understanding and identify relationships between ideas. Many valued this approach for its ability to reduce overload compared to more traditional, text-heavy lesson structures.

Second, the combination of text and simple visuals made learning more accessible to a diverse group of learners. Multilingual students, those who preferred visual or physical engagement, and students comfortable with text all found their own ways into the learning. In this way, sketchnotes functioned not only as a pedagogically sound strategy, but also as a culturally responsive and multimodal one.

Third, the literature's assertion that sketchnoting is about *"*ideas, not art*"* helped shift the focus from drawing ability to memory-making. Students began to see sketchnotes as functional visual structures that support understanding, rather than creative displays.

Ultimately, sketchnotes are more than a visual aid—they offer a way of thinking, reflecting, and making meaning together. This approach not only supports deeper comprehension, but also honours diverse ways of knowing, inviting both students and teachers into a more relational, reflective learning space.

Future work will explore how sketchnoting can further support students' critical reflection by breaking down and mapping practice scenarios. It will also be valuable to track responses across time and different cohorts to examine whether increased familiarity with the method changes its perceived impact.

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