The Effect of Collaborative Anchoring on the Development of Digital Curation Skills Among Nursing College Students

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Abstract: This study aimed to examine the effects of collaborative anchoring on the development of digital curation skills among nursing college learners engaged in healthcare animation design activities. A cohort of thirty participants was recruited and evenly distributed into six groups to participate in three distinct animation design sessions, each incorporating different instructional interventions. Initially, participants engaged in a face-to-face discussion, during which they reviewed and critiqued the strengths and weaknesses of an assigned healthcare animation video. Subsequently, they participated in an online collaborative anchoring session utilizing a cloud-based application, SyncSketch, to critique another animation video within a structured digital environment. The final session involved anonymous online collaborative anchoring, wherein the same task was conducted, but all feedback was provided anonymously. A six-genre collaborative anchor framework was devised to analyze discrepancies in anchoring across the three instructional sessions. Additionally, a debugging task was administered to assess variations in digital curation skills following the experiment. The findings indicated that the use of SyncSketch's timeline anchors significantly enhanced participants' focus and engagement, resulting in more precise and targeted feedback compared to traditional face-to-face discussions. Furthermore, the anonymous online collaborative anchoring fostered a more equitable peer review dynamic, ensuring that all participants could contribute meaningfully.The study concludes by discussing the implications of integrating collaborative anchoring into nursing education as a means to enhance digital curation skills.

Keywords: collaborative anchoring, digital curation, nursing students, animation design, healthcare

1. Introduction

Improving healthcare literacy is a key objective within the Sustainable Development Goals (SDGs), which emphasize the importance of ensuring healthy lives and promoting well-being across all age groups. One effective method for the public to acquire healthcare knowledge is through interactive and visually engaging instructional media, leading nursing colleges to increasingly incorporate animation design into their curricula. The creation of these interactive, multimedia projects, while seemingly a technical and creative endeavor, involves much more than just artistic skill (Lowe & Ploetzner, 2023; Parikh & Huniewicz, 2015). It requires students to engage in digital curation—a process that involves the selection, organization, and presentation of healthcare content (Fleer, 2018). Through this process, students are compelled to revisit, reflect upon, and critically evaluate their own knowledge of healthcare practices.

As students progress through the various stages of digital curation, they are challenged to think critically about the presented content. This iterative process enhances their technical skills and solidifies their understanding of healthcare concepts. In this sense, animation design serves as a tool, reinforcing nursing students' grasp of healthcare knowledge while simultaneously developing their curation skills. By equipping students with these

competencies, teachers enhance their digital literacy and ensure they can translate abstract healthcare concepts into accessible formats, making digital curation a fundamental component of nursing education (Preim & Meuschk, 2020). In authentic classroom settings, it has been observed that nursing students often engage in projects as an individuals, with minimal peer interaction during the design process. Solitary work can be attributed to three key aspects. First, students frequently fail to recognize the benefits that collaboration can offer. Shared reflections is often underestimated; however, these elements are crucial for fostering a deeper understanding of both the technical and conceptual aspects of digital curation. Second, there lacks effective strategies to promote meaningful collaboration among students. In many cases, the emphasis on individual projects leads students to focus narrowly on their own work, often overlooking the potential benefits of peer interaction. To counteract this, teachers must actively create environments that encourage the sharing of ideas through collaborative assignments or peer review sessions that require students to work towards a common goal. Third, persistent stereotypes of healthcare animations can hinder the adoption of collaborative learning approaches in design practices. Traditionally, healthcare animations have been characterized by a "talking head" format, where a central figure delivers information against a backdrop of written text or simple graphics. This format, while functional, is often perceived as uninspiring, potentially discouraging students from experimenting with more dynamic elements in their designs.

Furthermore, the rapid advancement of AI-generated content (AIGC) tools have streamlined the animation creation process by generating content with minimal user input, resulting in misconception that high-quality healthcare animations can be produced quickly, without the need for extensive peer engagement or collaborative effort. As a result, students may neglect the rich learning opportunities that arise from working closely with their peers to develop more innovative and contextually relevant animations. To overcome these challenges, it is imperative that educators emphasize the importance of collaboration as a core component of the digital curation process. By shifting the focus from individual achievement to collective learning, students can develop a more holistic understanding of digital curation, ultimately producing animations that are not only technically proficient but also more effective in conveying complex information to diverse audiences.

2. Collaborative Anchoring and Learning

The notion of "Anchoring" in learning refers to the cognitive process where new information is connected to a learner's existing knowledge or a specific, meaningful context (Bransford, Brown, & Cocking, 2000; Chi & Wylie, 2014). Through anchoring, learners grasp and retain new concepts more effectively by relating them to something familiar, making the experience more coherent and memorable. This process also involves the activation of cognitive schemas, mental frameworks that help organize and interpret information (Wilson, Houston, Etling & Brekke, 1996). When learners encounter new material, these schemas are triggered, allowing them to relate the new information to what they already know. In the context of learning complex and abstract concepts, such as healthcare knowledge, anchoring plays a crucial role. It involves identifying and focusing on specific content that warrants further exploration, essentially 'putting down anchors' to signify key areas of learning progression. This anchoring process can be facilitated either by the learner or the instructor, depending on the educational requirements and context. By employing anchoring strategies, both learners and educators can enhance the clarity and depth of understanding, making the learning experience more structured and impactful.

Collaborative anchoring is an instructional strategy designed to enhance group learning and collaboration by utilizing shared reference points, or "anchors," that guide and structure discussions, problem-solving, and decision-making processes. These anchors, which can take various forms such as key concepts, questions, visuals, or examples, serve as a common basis for all participants. By focusing on these shared reference points, collaborative anchoring ensures that the group's efforts remain aligned and coherent, thereby promoting more effective and focused discussions (Mussweiler & Strack, 1999). This instructional

strategy encourages students to work together, using shared knowledge and experiences as a foundation to explore and understand new concepts. The idea is that collaboration helps to solidify understanding, making learning more meaningful and contextually relevant.

Collaborative anchoring in learning offers several advantages that can significantly enhance students' educational experiences. One of the benefits is to foster deeper understanding through social interaction and shared knowledge construction. For instance, when a group of students watch the same animation video for peer review, they are required to articulate their thoughts, justify their reasoning, and critique the ideas of their peers. This process not only helps to clarify individual understanding but exposes students to diverse perspectives and approaches, which can enrich their conceptual frameworks.

Research has shown that collaborative learning environments encourage active engagement and critical thinking, as students must work together to solve problems and construct new knowledge (Johnson, Johnson, & Smith, 2014; Laal & Ghodsi, 2012). Another advantage of collaborative anchoring is its ability to create a more inclusive and supportive learning environment. In a collaborative setting, students often feel more comfortable expressing their ideas and asking questions, as the group dynamic can reduce the pressure of individual performance. Furthermore, collaborative anchoring fosters a sense of community and shared responsibility for learning, which can lead to higher levels of motivation and persistence (Dillenbourg, 1999). However, the main disadvantage of collaborative anchoring is the potential for unequal participation among group members. Dominant students may take over the discussion, while quieter students may contribute less, leading to an imbalance in the learning experience. This can result in some students not fully benefiting from the collaborative process. Additionally, if group dynamics are not managed effectively, there is a risk of groupthink, where the desire for consensus overrides critical evaluation of ideas, leading to less effective learning outcomes (Jones, 2007; Slavin, 2014; Raithel, 2002;).

Henceforth, other researchers implemented anonymous anchoring, allowing students to concentrate more on the creative aspects of the narrative, focusing solely on the strength of ideas, character development, or storytelling techniques rather than interpersonal dynamics or social biases. In a narrative-driven design course, this objectivity can be beneficial, as it encourages participants to critique and refine the storyline based purely on merit (Rotsaert, Panadero & Schellens, 2018). Ensuring that all students are equally engaged and that the collaboration is productive requires careful instructional planning and ongoing monitoring. Below are the research questions for the study:

1. Does online collaborative anchoring more effectively help nursing students identify design problems in healthcare animation?
2. What types of anchors are created by nursing students when engaging in online collaborative anchoring?
3. Does anonymous collaborative anchoring help participants identify design problems more effectively than profiled collaborative anchoring?

3. Research Method

3.1 Participants

The study was conducted at a nursing college in northern Taiwan. A total of 30 sophomores majoring in health education-related programs participated, comprising 21 females and 9 males. None of the participants had previously enrolled in any courses related to animation design prior to the study.

3.2 Research Design

The current study aimed to explore whether collaborative anchoring can be applied to the development of digital curation skills among nursing college students. All participants attended a 100-minute lecture by the researcher on digital curation skills with healthcare animation. Afterward, participants were randomly assigned to six groups, with five participants in each group. Each participant attended 50-minute digital curation design experiments for three

consecutive weeks inside a computer lab while the researcher served as the sole instructor. Participants first spent 10 minutes watching a six-minute healthcare animation about heart disease, followed by 25 minutes in predefined groups to discuss the strengths and weaknesses of the animation. The final 15 minutes were reserved for assessment, during which each participant was asked to perform a debugging task to identify design problems in a three-minute animation video. To examine the effects of collaborative authoring, different interaction methods for peer critique were implemented. In the first experiment, a "face-to-face oral discussion" approach was employed, mirroring traditional classroom settings. Participants in each group were required to log into a Google Meet room to record and transcribe their discussion outcomes using the Tactiq application. In the second experiment, a "profiled collaborative anchoring" approach was employed, where participants logged into "Syncsketch" on individual PCs to engage in online collaborative anchoring of the animation video as a group. In the third experiment, a "anonymous collaborative anchoring" approach was utilized, following the same procedures as in week two but with all anchoring conducted anonymously online via Syncsketch. Following each collaborative anchoring session, participants were assigned a debugging task for individual review and were asked to use Syncsketch to identify and annotate design problems.

3.3 Research tools

For the first experiment, the researcher utilized the Tactiq application to automatically record and transcribe dialogue from discussions in each group. After peer discussion, the transcribed data can be downloaded and organized for further analysis. Tactiq enable the researcher to track who said what and when, which is essential to the understanding of participant interactions or the sequencing of dialogue.

For the second and third experiment, SyncSketch was utilized as the primary tool to facilitate participants' engagement in collaborative anchoring for healthcare animation design. This application enabled participants to review the animation video at their discretion and create anchor points on the timeline upon identifying any strengths or weaknesses. Following the creation of an anchor point, participants provided their critiques in a textbox located in the bottom-right corner of the interface. Once an anchor with accompanying comments was posted, it became accessible to all members of the group, thereby enabling others to either support the same observation or introduce a new perspective. A screenshot of Syncsketch was presented in figure 1.
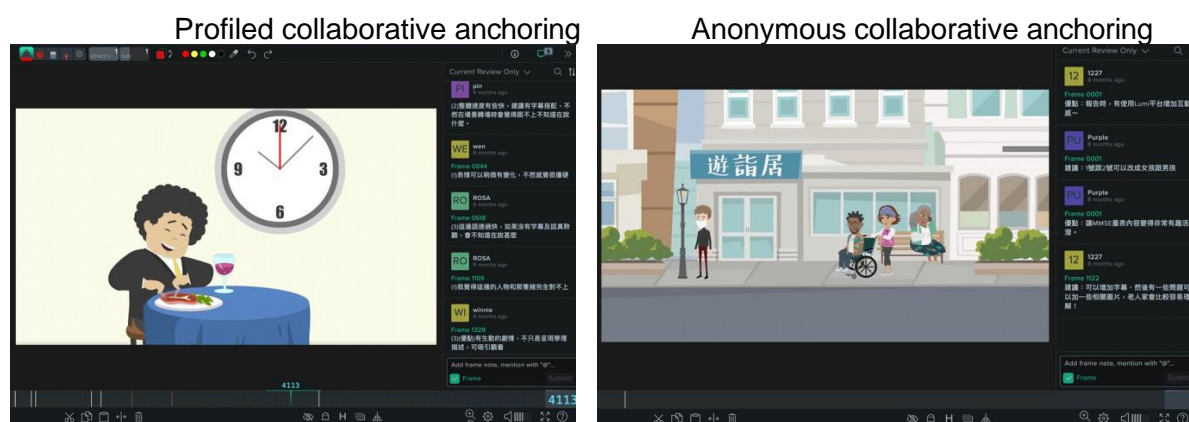
Profiled collaborative anchoring	Anonymous collaborative anchoring

Figure 1. A screenshot of the Syncsketch application

3.4   Assessment

To evaluate the learning outcomes of digital curation, the researcher analyzed the results of collaborative anchoring and the final debugging task. When analyzing the anchors created in Syncsketch, the researcher categorized the anchors for animation design critiques into six genres: (1) narrative anchor: critiques regarding plot structure, character development, and

choice of themes; (2) visual anchor: critiques regarding the design of art style, choice of colors, and arrangement of visual elements; (3) audiovisual anchor: critiques regarding audio design, music integration, and voice acting; (4) technical anchor: critiques regarding the fluidity of the animation, the use of effects, and their impact on storytelling; (5) knowledge anchor: critiques regarding the accuracy of information, clarity of explanation, and engagement with content; and (6) abstraction anchor: critiques regarding the use of analogies, level of abstraction, and choice of metaphors. This systematic categorization enabled the researcher to evaluate the effectiveness of the learning process. All anchors created by participants were recorded and categorized based on the above framework.

A customized scoring rubric was developed to assess participants' learning performance in the debugging task. The rubric was designed with respect to the six genres of anchors, with each genre holding a full score of 4 points, making the full score 24 points. Each scoring criterion within the rubric was carefully reviewed by three experienced animation designers to ensure its consistency and reliability.

4. Preliminary Results

The research initially analyzed the distribution of anchor genres across three different learning activities in table 1. This breakdown allowed for a deeper understanding of how participants engaged with the various aspects of animation design and how their critiques aligned with the six established genres. This preliminary analysis served as a foundation for evaluating the overall effectiveness of the learning activities.

Table 1. *Distribution of anchor genres across three different learning activities*

	Narrative	visual	audiovisual	technical	knowledge	abstraction
Face-to-face discussion	0%	46%	34%	17%	3%	0%
Profiled anchoring	22%(27)	20%(25)	17%(21)	18%(22)	15%(19)	8%(10)
Anonymous anchroing	10%(17)	33%(55)	28%(47)	14%(23)	10%(16)	5%(9)

The preliminary findings revealed that participants primarily critiqued visual (46%) and audiovisual (34%) design issues during face-to-face discussions, where visual anchoring tools were unavailable. However, when shifting to profiled collaborative anchoring with Syncsketch, the focus of critiques broadened, with a decrease in visual and audiovisual critiques and an increase in attention to knowledge (15%), narrative (22%), and abstraction (8%) design aspects. This shift indicates that the availability of visual anchoring in Syncsketch may have facilitated a more diversified critique process. When comparing anonymous anchoring with profiled anchoring, the distribution of anchors is similar; however, it is notable that the total number of anchors increased from 124 to 167, suggesting that anonymous anchoring encourages participants to more actively engage in identifying design problems. In terms of learning outcomes across the three debugging tasks, statistical analysis using the independent t-test showed a significant difference between profiled collaborative anchoring and face-to-face discussion ($p < 0.01$). However, no significant difference was observed between profiled and anonymous collaborative anchoring.

5. Conclusions

Compared to traditional face-to-face discussions, online collaborative anchoring using SyncSketch was found to significantly enhance the focus and engagement of peer critiques

on animation projects, ultimately improving participants' digital curation skills. The anchors displayed within Syncsketch's timeline served as focal points, directing learners' attention to specific elements of the animation, which resulted in more targeted and constructive feedback. Moreover, this method promoted a more equitable peer review process by ensuring that all learners had the opportunity to express their opinions, as opposed to the dynamics often observed in face-to-face discussions. Although the implementation of anonymous online collaborative anchoring did not show a significant improvement in digital curation skills, it appeared to reduce the influence of predefined group roles. This setting allowed participants to contribute more freely, without the constraints of hierarchical dynamics. The anonymity provided by this approach encouraged more inclusive interactions, reducing hesitation and deference to dominant group members. Consequently, group dynamics shifted towards a more egalitarian and collaborative structure, enhancing the overall quality of the peer review process.

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