

# Identifying Creativity in Art & Design Education: Multimodal Design Practices in 3D Virtual Worlds

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## Abstract

As more and more instructors educators in the Art & Design Education have become enthusiastic about the potential of 3D virtual worlds (3DVWs) in learning and teaching, there is a need to consider the question of how to identify creativity in the Art & Design classroom. By adopting a multimodal view of social semiotics as an analytical approach, this paper explores the sociocultural conception of creativity through the design processes in VWs. It investigates how the multimodal elements of their materials and virtual environments are taken to be new design works of individuals in their effort of meaning-making. In addition, it also offers pedagogical viewpoints involving the recognition of the agency of young design students. All these steps demonstrate helpful to educators when developing a learner-centred virtual environment to foster creativity in class.

**Keywords: Creativity, 3D Virtual Worlds, Multimodality, Social Semiotics, Meaning-making**



Art & Design Education. The ability How to recognize student creativity is key to support students' development as creative designers and meaning-makers, and the value of creative thoughts and actions lies in Art & Design Education. The way that teachers conceptualize creativity is critical, as our perceptions of creativity affect how we identify and appreciate creativity in our students' design work. Although the concept of creativity is not easily defined because of its diversity in different domains and perspectives, many contemporary educators and researchers have accepted Vygotsky's conception of everyday creativity (Vygotsky 1950, 2004). Central to this notion is that creativity is not privileged ability that a few selected individuals have. Instead all people can exhibit acts of creativity throughout their everyday activities in many different ways.

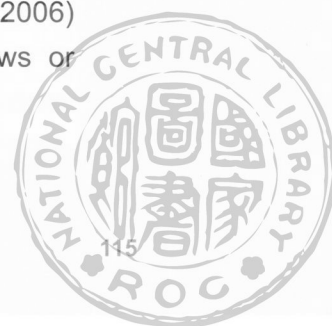
This perception of everyday creativity is crucial for Art & Design Education. It helps art and design educators understand creativity as an ability that is manifest in every student; it underscores the importance of recognizing students' processes of developing creativity in support of their growth. In this paper, this paper introduce the concept of everyday creativities in the sociocultural theory of communication and explored a case of a novice 3D virtual world (3DVW) designer, who drew upon the multimodal elements of the virtual environments in making of signs and meanings.

## **Multimodal Nature of Art & Design Education and 3D Virtual Worlds**

Before delving into exploring creativity through design practices in 3DVWs, this paper would firstly discuss the inherent linkage between Art & Design Education and the VW technology.

The development of 3DVWs has been evolving for nearly 40 years since the late 1970s, and the transition from text-based to graphic-based virtual environments offer a wide range of user experiences. Schroeder (2006) defined the technology as a computer-generated display that allows or

Identifying  
Creativity in Art  
& Design  
Education:  
Multimodal  
Design Practices  
in 3D Virtual  
Worlds

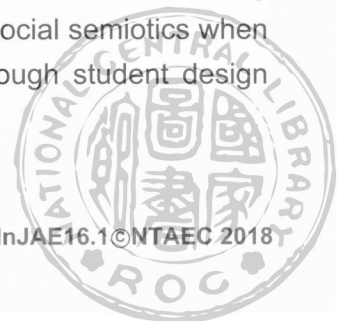


compels the user (or users) to have a sense of being physically present in an environment and being able to interact with other users.

There has been an increasing number of researchers and art educators including art and design educators, who are becoming interested in the potential and capabilities of Second Life® (SL), Active Worlds®(AW), and Virtual Commons for Education and Research (VCER). These examples of VWs are well received, for they allow users to create animated and interactive virtual art and spaces in their artistic and creative expressions (Doyle, 2010; Gaimster, 2008; Lester & Linden, 2009; Liao, 2014; Lu, 2010; Salmon, 2009; Han, 2011; 2015a, 2015b; Stokrocki, 2014; Ward & Sonneborn, 2011). According to Dickey (2003, 2005), the digital tools provided by VWs afford distinctive pedagogical activities that engage students with learning and creating 3D objects and spaces via interactive functions.

Art & Design Education in the past has been focused on the interaction between visual elements such as images, written texts, colors, textures, shapes, and layouts since these visual elements refer to the graphic illustrations for printed mass communication. Today, technological innovations have extended the contemporary cultural forms such as television and internet into more than one communicative mode of sight including sound and voice, video, movement, gesture, and animated graphics (Duncum, 2004). As a result, this extension of forms requires Art & Design Education to expand its discipline to include both multimedia and interactive design to develop young design learners' interactive communication skills as well as a comprehensive virtual environments (Barnes, 2011).

Given the rapid shift in visual forms of communication, emerging VW technology may be considered as an alternative learning platform to develop communicative skills based on its multimodal affordances. In the following sections, this paper will draw upon multimodal view of social semiotics when faced by questions of how to recognize creativity through student design processes.



## Multimodal Social Semiotic Approach to Creativity

According to Kress (2013), education is a social process, in which instructors and learners interact as instances of communication. To foster and identify creativity of design learners in the virtual world, it requires an applicable theory of communication in education. Nonetheless, the traditional view of communications has emphasized on the assumption of communicational relations where the sender constructs, encodes, and sends the message while the receiver receives and decodes it (Kress & Bezemer, 2015). Based on the above assumption, contemporary theories of learning are developed into a theory of meanings. It furthers that meaning arises from a stable system and reproductive forms, processes, and actions (Selandar, 2013). Consequently, lecture-centred and grades-dominated learning predominates today's art and design class (Dineen & Collins, 2005). It pays excessive attention to repetition, memorization, and training of the narrowly-defined skills and knowledge of the previous generations. This "traditional" education not only exemplifies how the teacher's authoritarian and hierarchical power that can be seen as "the dominant social-pedagogic relation" (Kress, 2013, p.120). It also hinders teachers from be aware of students' creative design processes as they emerge.

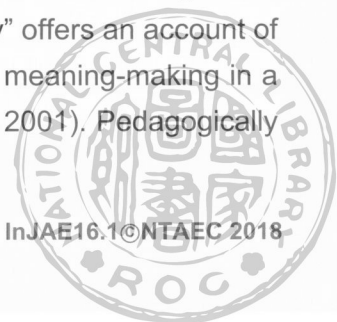
More exactly, if the focus of education is only on measuring knowledge transmission in the domain of the same field, it is unlikely that students can come up with creative and innovative variations. In other words, we should reject over simplified sender-receiver communication models to foster creativity. Instead, we need to adopt a view that we consider students as the key factor to ensure that there has been communication and learning taking place in class. In this regard, the conception of multimodal social semiotics, developed by Kress (2013), is relevant. This paper attempted to understand the role of digital information and environments in educational settings. In particular, Kress' (2010) work *Multimodality: A Social Semiotic Approach to Contemporary Communication* offers a plausible account of the audience as one key factor to ensure effective communication.

Identifying  
Creativity in Art  
& Design  
Education:  
Multimodal  
Design Practices  
in 3D Virtual  
Worlds



More specifically, the traditional semiotics is premised on the hypothesis that the relevant meanings are static in the texts themselves and are independent from social contexts (Buckingham, 1993). This assumption does not take semiotics as associated with creativity in education. However, a multimodal social semiotic perspective connects the meanings people render to the social environments and interactions, which brings the social as a driving force into the domain of meanings (Kress, 2010). Therefore, Kress (2013) offers a different view that considers the role of people as meaning-makers in the process of meaning-making in communication. Education in this view is instances of communication. To gain critical understanding of how to identify and develop creativity in students' design practices in virtual environments, identification of students' interests and motivations become paramount. Multimodality is therefore built on the assumption that "communication and representation always draw on a multiplicity of modes, all of which have potential to contribute" to meaning-making (Jewitt, 2009, p. 14). In this regard, multimodality can be seen as analytical approaches that are capable of examining communication and representation in and across a range of semiotic modes such as language, color, image, sound, spoken voice, movement, as well as 3D objects. From this perspective, creativity is negotiated from the design processes which are shaped by the meanings of various modes made by the creators in VWs. Such an approach can afford an effective communication in Art & Design Education, since the teacher allows students to demonstrate their creativity via different modes. Whenever the teachers respond to students in the process of meaning-making, it means that they support students' creative design processes.

Furthermore, the term *Social Semiotic Multimodality* deals with dual focuses: "social semiotics" assumes that sign-meaning and knowledge-making are effects of communication in social settings with respect to affordances and constraints. "Multimodality" offers an account of modes as socially and culturally shaped resources for meaning-making in a particular community (Jewitt, 2015; Kress & Leeuwen, 2001). Pedagogically



speaking, Social Semiotic Multimodality is a theoretical framework that conceptualizes learning as sign-making, and a result of semiotic work by sign-makers (whether as learners, teachers or students, or irrespective of social status), who interact with socially and culturally constructed resources to produce signs. This conception is in alignment with Deleuze's (1994) view about learning: "to learn is indeed to constitute this space of an encounter with signs, in which the distinctive points renew themselves in each other, and repetition takes place while distinguishing itself "(p. 23). From this perspective, learning as this paper understand it takes place when there are signs and a response. As Kress (2013) suggests, "without interaction-as-communication, there is no meaning-making, no learning, no (change to) knowledge" (p. 122), hence no creative acts. If we take on this multimodal view of meaning-making to understand 3DVWs as learning environments for nurturing creativity, two pedagogically oriented assumptions based on communications include: 1) as all signs in all modes have meaning potentials which are present in and constitute 3DVWs, we must be aware of individual modes and modal complex conjointly that contribute to the meaning construction of design practices within virtual environments; 2) since "all signs in modal complex can be taken up by participants in an engagement as *prompts*" (Kress, 2010, p. 35), we must explore how learners are motivated to select the multimodal resources of VWs as *prompts* guided by their interests, which involves interactions that interpret the *prompts* made by multimodal resources. This interpretive interaction is what Kress & Bezemer (2015) describe as "transformative engagement" in which members of a group constantly renew, remake, and transform social virtual environments from the perspective of meaning. As the transformative interpretation of the *prompt* enables communication to constantly take place, transformative learning could be seen as acts of creativity.

A rationale for adopting a communications theory of multimodal social semiotics to learning and design practices in 3DVWs has been presented.



To make it concrete, this paper will draw on a design practice conducted in the virtual world of VCER (Virtual Commons for Education and Research) at the University of British Columbia as a case study .

## Multimodal Design Practices as Learners' Transformative Engagement

From the perspective of communications, Kress & Bezemer (2015) assume two kinds of the learning conditions. One involves communication between two sign-makers: learners-as-sign-makers, who have been addressed by teachers, instructors, curators or any organizations that have been responsible for learning. The second involves a condition , where learners have not been directly addressed by gatekeepers of knowledge, but instead initiate and organize their own learning in the absence of such communication.

Online multi-user VWs afford both instances of learning. In this paper, it will explore transformative engagement as creative acts by dealing with the second learning condition. The use of VWs for developing creativity in Art & Design Education is a relatively new subject. Related research studies are limited and their involvement in the intersection of multimodal social semiotics is rare. As an art and design educator, this paper will use the first multimodal design practice of a virtual Bauhaus school in VCER as a case study. Translated into a social semiotic multimodal account of learning, this investigation of multimodal design practice is to explore semiotic relations between the created signs and the virtual environment, which contains semiotic resources. Through this process, this paper aims to gain insights into the rich semiotic resources afforded by VWs for potential sign-maker's transformative engagement, looking forward to creative and innovative outcomes. <sup>1</sup>

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<sup>1</sup> Video Source: <https://youtu.be/VMYz9JUG64Q>

Figure 1 Source: [https://ubc\\_vcer/region/Multimodality%20Learning%20Center/89/155/35](https://ubc_vcer/region/Multimodality%20Learning%20Center/89/155/35)





**Figure 1** Le Corbusier Cité building in VCER

Figure 1 is a snapshot taken from one corner of the Bauhaus school that is created in VCER. It is a virtual school designed for teaching students at the post-secondary level of Art & Design Education. In the snapshot, several three-dimensional elements exist including: three architectures, a hill, a moving train on the railway, a guiding board, a public square and a blue sky, all of which are a part of the visual arrangement of the school. From a multimodal view of meaning-making, the snapshot depicts the creator's multimodal design practice and processes, which can be interpreted as signs of learning where creativity emerges from the learning as constantly renewed signs (Kress & Bezemer, 2015). More specifically, in this case, learning is achieved through the sign-maker's engagement with signs that prompt transformation into an entirely novel virtual representation of the modes documentary. As well, the snapshot informs the instructors how a novice VW designer interprets the Bauhaus school from the real world. Prior to constructing this virtual environment, the designer spent two weeks seeking relevant information about Bauhaus school including its historical development, significance in the field of Art & Design Education, the school's design philosophy and products, and leading Bauhaus teachers and designers. Field notes and sketches were also made throughout the case study. Back in VCER, with its distinct multimodal affordances, the designer drew upon these multiple elements of the documentation to create the virtual

Identifying  
Creativity in Art  
& Design  
Education:  
Multimodal  
Design Practices  
in 3D Virtual  
Worlds

Bauhaus school with animated and interactive components by “redesigning” (Cope, Kalantzis, & New London Group, 2000) the assemblages of specific images, colors, shapes, design motifs, and forms of media.

To attend social semiotic aspects, we need to consider the social and semiotic conditions in which the Bauhaus school was created. By its account, the intention of building a virtual school for teaching art and design reflects the school builder’s professional position both as an artist and teacher in Art & Design Education. This also uncovers the designer/sign-maker’s interests that are the sources of the specific *semiotic repertoires*. Communicationally speaking, the school designer’s attempts to address entry-level learners of Art & Design Education as the visitors who come to engage with the virtual Bauhaus school, are also based on the assumption that learners need to acquire fundamental art and design knowledge regarding shapes, colors, 3D compositions, and so forth. With respect to semiotics, the “conceptually ordered representation” (Kress & Van Leeuwen, 2006) of modes in this virtual school setting can be taken as sign-complex guided and is organized by the sign-maker’s interests; the *materiality* of the objects, environmental setting, and specific genre are made evident by the degree of the sign-maker’s interpretative engagement with the prompts by the modes documentary of Bauhaus school.

The multimodal aspects of this theory attend to identifying the difference of modes used and how they are used (i.e., their affordances). For example, the Le Corbusier Cité building is a signature Bauhaus-style architecture. It is at the centre of the snapshot to represent what the designer saw during the research stage. Mondrian’s geometric abstract painting—a composition of red, blue and yellow, which later on became an important subject taught in the Bauhaus school—reflects neoclassicism and a utopian approach to design. The color elements represent what the designer *observed*.; the animated and interactive element of the moving train that is an old toy train of the 1920s when the Bauhaus school existed is another representative exemplar of what the designer saw. The san-serif typography developed by Bauhaus manifests the Bauhaus-style of a prevailing harmony between form and



function and a noticeable absence of ornamentation. These are written elements that represent what the designer *observed*. The German background music of the 1920s represents an audio element that the designer heard. By examining the multimodal design practice of Bauhaus school, we can understand the process of Inter-modal changes/transductions that are related to entities/unities/elements (Kress & Bezemer, 2015). Because the designer transformed the various modal resources into different ones—from what seeing, hearing to the script-based three-dimensional designs in VCER), these inter-modal changes revealed degrees of creativity in the transformed and newly made modes that would surely deliver meanings.

As for the animated and interactive 3D objects and setting of the virtual school, the designer assembled them with various images, texts, and music to create a mediated environment for avatar-based social interactions, which could be regarded as multimodal orchestrations of sign systems. For instance, Figure 2 is an illustration of the visiting avatars sitting on the animated moving train before taking a tour of the Le Corbusier Cité building; Figure 3 depicts the time when they were watching a plug-in video about the Bauhaus design philosophy; Figure 4 is the moment when an avatar was triggering the background music to play.



**Figure 2** Sitting the animated moving train in VCER

Identifying  
Creativity in Art  
& Design  
Education:  
Multimodal  
Design Practices  
in 3D Virtual  
Worlds



Figure 3 Watching YouTube in VCER

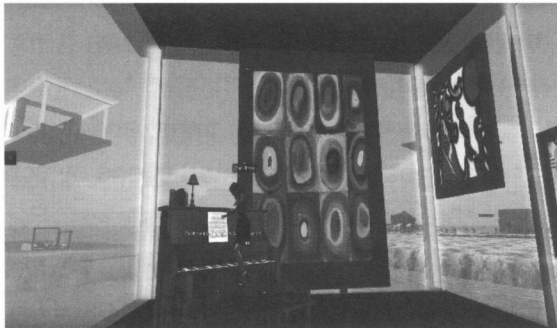


Figure 4 Triggering the music in VCER

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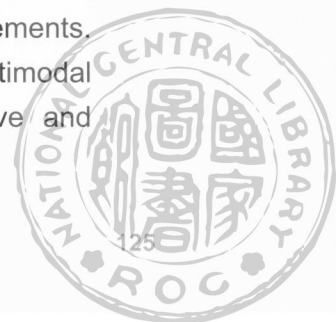
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From a multimodal perspective of meaning-making, the three snapshots expand the design practice by taking account of the semiotic relationship between sign-complex and the virtual environment. For one thing, the animated and interactive objects and settings are the clues to the designer's interests in the virtual world application of participants' potential "re-enactment" as affordance (Kress & Bezemer, 2015, p.163). Also, the interactive representations of a virtual Bauhaus not only bring new communicational possibilities that distinguish them from other design works in the real world, but also shows how the rhetorical content could be



continuously re-constructed through social interactions as creative. In a social semiotic multimodal account, the avatar-based communication in a computer-mediated environment offers us the opportunity to explore the individual's relationship with the semiotic objects and to examine the social practices constructed through interacting with the semiotic objects. To capture the rhetorical content constituted through interaction, we could observe responses from instructors and learners to what draws their attention as *prompts*. Avatar participants' gestures, gazes, facial expressions, voice chats, and written texts (with others) are the re-enactment of activities afforded by the virtual school. In terms of semiotics, these responses are the signs made externally by avatar participant's interpretative engagement with these modes, transforming or transducing them into a new sign-complex. Here too, as previously discussed, different modes bring different semiotic resources for meaning-making with each mode drawing attention to what is differently represented. Therefore, the different animated and interactive modes differently shape and structure each avatar's engagement with the world.

In short, from the analysis and description of the case of a multimodal design practice, it is clear VWs provide a wide range of multimodal semiotic resources for meaning-making. Through the lens of social semiotic multimodality, creativity in virtual design practices is demonstrated as a complex process in which the designer draws on the prompted prior social and cultural experiences, events and materials. The *motivated* multiple modes afforded by social virtual environments as sources of meanings, at the same time, are creatively and imaginatively selected, interpreted, redesigned, and transformed into new combinations in the modes being assembled. This sociocultural perspective of communications on creativity underpins Vygotsky's (1950/2004) idea of everyday creativities as a new creative whole of transformation and recombination that consist of ideas, concepts, experiences, images, and other socially formed elements. However, it is worth noting that without the rich and indistinctive multimodal semiotic resources provided by VWs, it is impossible to achieve and



experience the embodied and interactive art expression associated with intrapersonal and interpersonal understandings and knowledge. Therefore, if incorporating such a technology in Art & Design Education, more creative multimodal designs could be expected to emerge from students' new ways of perceiving, feeling and interpreting the world.

## Multimodal Design Practices as the Recognition of Learners' Agency

An increasing number of educators and researchers in various disciplines have explored the great pedagogical potential of 3DVWs (Baker et al. 2009; Barab, et al. 2001; Freitas & Veletsianos, 2010; Gaimster, 2008; Han, 2015; Lu, 2013; Salmon et al. 2010). Such a potential trend provides a variety of explorative and playful learning activities that are capable of developing students' creativity in the design processes including: building interactive 3D virtual objects and environments, playing different options for changing appearances, outfits, shapes, and the viewing angles of avatars, and using different communicative methods for interactions. From a multimodal social semiotic perspective, it suggests pedagogical orientations to creative acts in the multimodal design processes in VWs. Again, because the sign-maker addresses socially formed signs from the social aspects, the semiotic effect from the agency and the identity of the sign-maker can be identified (Kress, 2010).

Furthermore, a review of the above discussion reveals the multimodal design practice of Bauhaus school that reflects the novice VW designer's transformative engagement. This engagement illustrates how the designer interacts with virtual environments, reflects the interests of the designer at the particular moment, and indicates creativity with a constant renewal of semiotic resources. Within this frame, the designer/sign-maker's interests in specific parts of the virtual world is at issue. All modes of the designer's semiotic practice shows how the *prompts* have been shaped with the focus of attention. As well, "In a social-semiotic take on communication and



representation, all signs are metaphor, newly made” (Kress, 2010, p. 55). In this sense, The representations of Bauhaus School design are the metaphors of the designer’ semiotic work in the engagement with the *prompts* of the virtual environment, embodying distinct interests at the particular moment of the making of signs/sign-complex.

At its core, the primary educational purpose of dealing with the interests of the sign-maker is to identify and shape young design learners’ capacities into a reasonable alignment with their sense of agency and interests in exploring and designing in VWs. This identification and shaping efforts can play a crucial role in spotting out design learners’ creative acts as they emerge, in taking all the signs they made seriously, and to be supportive of their creative processes. Gürsimsek (2014) uses multimodal social semiotic frameworks to analyze how the co-creation and co-design practices in the virtual world to generate meaning potentials. Similarly, we can also adopt this framework to examine all the signs that design learners make in VWs. To be more specific, the learner’s multimodal designs are the new semiotic combinations and extensions that are inspired by virtual world technology. All the gestures, written and verbal languages, music, images, and appearances of avatars are the signs and sign-complex that are newly made and *motivated* in the combination of forms and meanings based upon learner’s interests. In this sense, through a close examination of a documentary of the *motivated* signs and sign-complex, it is possible to reveal the degree of the learner’s engagement and to illustrate what they have learned from their experiences in the virtual environment. This pedagogical approach enables the design learner’s interests to be transparent in his/her design processes and practices, which allows for the recognition of the learner’s agency in VW education and beyond. Thus, adopting a multimodal social semiotic perspective could be regarded as the “apt metric for assessment/evaluation” (Kress, 2010, p. 182). When the design learners’ capabilities are required, the design learners can produce new representational formulations with sufficient new meanings. It also helps to



identify digital products as a way of how professionals produce design products in both virtual and real worlds.

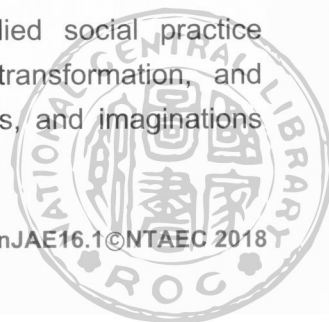
## Limitations

Even though multimodal social semiotics offers a fresh perspective to identify and shape creativity in digital educational environments, some critics hold that the concept of multimodality is “a kind of linguistic imperialism that imports and imposes linguistic terms on everything” (Jewitt, 2015, p.265). This seems to make the multimodal analysis a narrower linguistic-grounded analytical approach. However, a multimodal view of social semiotic is premised on the assumption that the meanings of signs are made by people’s selections and configuration of modes in particular moments and a specific social context (Jewitt, 2009). As a result, this theory is capable of dealing with a range of multimodal semiotic systems that people have to investigate meanings.

## Conclusion

In identifying art and design learners’ creative trajectory of multimodal designs in 3DVWs, a multimodal view of social semiotics provides a dual focus t: 1) on the multimodal elements of VWs as semiotic resources used in reproducing newly formed signs and sign systems; and 2) on the agency of design learners/sign-makers in social virtual environments. Both focuses play a significant role in explaining how 3DVWs can be seen as nurturing environments for developing students’ creativity and applying 3DVWs in Art & Design Education in terms of aims, processes, and evaluations.

We can observe and analyze how design students, guided by their interests, embody themselves to make real engagements with multimodal resources of VWs mediated through avatars. We can also understand how this engagement can be interpreted as an embodied social practice associated with the student’s identity, interaction, transformation, and materialization of ideas, values, concepts, experiences, and imaginations



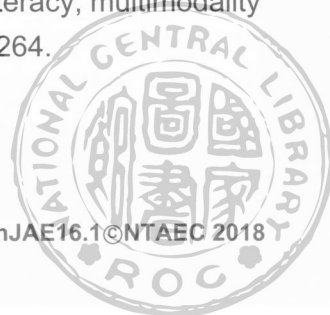
when faced by a newly combined multimodal design product. Walsh (2007) argues that the combination of multiple semiotic modes to create new forms of meaning that is inherently creative. Therefore, through a multimodality social semiotic lens, 3DVWs are capable of providing more engaging multimodal design opportunities, helping recognition of students' agency, which can be seen as a student-centred learning extension that traditional Art & Design Education does not afford. When we conceive creativity as meaning-making, externally emerging from on-going processes of transformative engagement with the learning environment, teachers and students can have a role to play in tapping into the creative potential of 3DVWs.

**Identifying  
Creativity in Art  
& Design  
Education:  
Multimodal  
Design Practices  
in 3D Virtual  
Worlds**



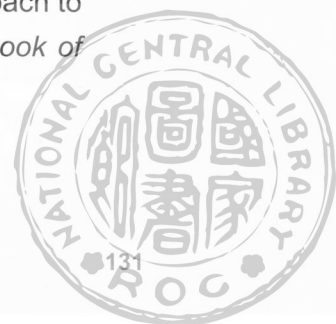
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Identifying  
Creativity in Art  
& Design  
Education:  
Multimodal  
Design Practices  
in 3D Virtual  
Worlds



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Identifying  
Creativity in Art  
& Design  
Education:  
Multimodal  
Design Practices  
in 3D Virtual  
Worlds



# 發現藝術與設計教育的創造力：三度空間虛擬世界的多模態設計實踐

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## 摘要

由於三度空間虛擬世界在於教育領域的應用潛力得到越來越多教育工作者，包括藝術設計專業教育工作者的廣泛肯定，怎樣從學生在虛擬世界設計過程中發現和認可他們的創意力是目前急需考慮的問題。本文基於社會文化學視角下對於「創意」的理解，採用多模態社會語意學為分析手段，對虛擬世界中設計過程進行了詳細地剖析。研究結果揭示了多模態元素及其虛擬環境是怎樣被個人運用意義構建的方式重新設計成為具有新意產品，並且為藝術設計教育工作者提供了需認可學生為個人的教學法啟示，為發展以學生為中心的虛擬學習環境創造力奠定了培養基礎。

關鍵詞：創意、三度空間虛擬世界、多模態、社會語意學、意義構建

藝術與設計教育。教師必須有能力發現學生的創意，方能培養學生成為創意設計者，並獲得製造意義的能力，而創意想法與行動的價值須依靠藝術與設計教育實現。教師理解創意的方式十分重要，因為我們對於創意的感知，將影響辨識和欣賞學生設計作品的方式。創意這個概念橫跨多重領域和觀點，因此不易界定，但當代教育工作者和研究者大致接受 Vygotsky 提出的日常創意概念 (Vygotsky, 1950, 2004)。這個概念的核心理念是，創意並非少數人士獨有的能力。相反地，所有人都可以在日常活動中，以各種不同的方式來展現創意。

這種日常創意概念對藝術與設計教育具有重大意義，讓藝術與設計教育工作者明白，創造力會顯露在每位學生身上；若要協助學生成長，辨識學生的創意發展過程便是教師的重要任務。本文將介紹社會文化溝通理論當中的日常創意概念，並探討一位三度空間虛擬世界 (3DVW) 設計新人如何援用多模態虛擬環境元素，來創造符號和意義。

## 藝術與設計教育和三度空間虛擬世界的多模態本質

在深入探討 3DVW 設計實務的創意議題之前，本文將先討論藝術與設計教育及 VW 科技之間的內在關聯性。

自 1970 年代後期起，3DVW 已發展將近 40 年，虛擬環境從文本轉變成圖像，這個轉換過程也帶來許多豐富的使用者經驗。根據 Schroeder (2006)，虛擬科技是一種電腦顯示技術，能夠協助或驅使使用者（或使用者們）產生一種身臨實境的感受，同時還能與其他使用者互動。

越來越多研究者和教育工作者（包括藝術設計領域的教師）都開始關注第二人生<sup>®</sup> (SL)、Active Worlds<sup>®</sup> (AW) 和教育與研究虛擬社群 (VCER) 等虛擬環境的潛力和功能。這些虛擬環境之所以廣受歡迎，是因為使用者可以在其中創造動畫和互動式虛擬藝術與空間，進行藝術與創作表達 (Doyle, 2010; Gaimster, 2008; Lester & Linden, 2009; Liao, 2014; Lu, 2010; Salmon, 2009; Han, 2011; 2015a, 2015b; Stokrocki, 2014; Ward & Sonneborn, 2011)。根據 Dickey (2003, 2005)，虛擬環境提供可應用於教學活動的數位工具，透過互動式功能吸引學生參與學習，並創造三度空間物件與空間。

過去，藝術與設計教育一直強調視覺元素之間的互動性，例如影像、書寫、色彩、紋理、造型和版面，因為這些視覺元素多用於書面大眾傳播的圖像解說。今日的創新科技讓電視與網際網路等當代文化形式不僅做為視覺傳播方式，還能包含聲音與人聲、影片、運動、手勢和動畫繪圖 (Duncum, 2004)。這種形



式上的擴展促使藝術與設計教育隨之擴充其學科領域，納入多媒體與互動式設計，既要培養年輕設計者的互動溝通技巧，還要提供完整的虛擬環境 (Barnes, 2011)。

由於視覺溝通方式快速轉變，提供多模態功能的新興 VW 科技可視為培養溝通技巧的另類學習平台。接下來，本文將透過社會符號學的多模態觀點，探討如何辨識學生的設計過程，並發現其中創意。

## 多模態社會符號學視角下的創意

根據 Kress (2013)敘述教育是教師與學生互動、溝通的社會歷程。為了發展並辨識虛擬世界設計學習者的創意，教育界需要一套適用的溝通理論。但是，傳統對於溝通的看法大多假設傳播關係是由訊息發送者建構、編碼，傳送訊息，而訊息接收者負責接收與解碼(Kress & Bezemer, 2015)。依據上述假設，當代學習理論發展出一套意義論述，認為意義產生自穩定的系統與可複製的形式、過程與行動 (Selandar, 2013)。因此，教師主講、分數掛帥的學習模式成爲了今日藝術與設計課程的主流 (Dineen & Collins, 2005)。這種模式過度注重重複、記憶和訓練少數幾種狹隘的技巧和先前世代的知識。這種「傳統」教育不僅顯示教師的權威與權勢如何引導「主流的社會教育關係」(Kress, 2013, p.120)，同時也讓教師無法瞭解學生的創意設計過程。

更具體而言，如果教育僅著重在固定領域中計算知識的傳遞，學生便不可能提出創意與變革。換言之，我們應該拒絕這種過度簡化的發送接收溝通模式。相反地，我們必須轉換角度，把學生視爲教學的關鍵因素，確保課堂上的溝通與學習能同步進行。這一點恰恰呼應 Kress (2013) 提出的多模態社會符號學概念。本文試圖瞭解數位資訊及環境在教育背景當中扮演的角色。Kress (2010) 的多模態：當代傳播的社會符號學解讀一書更指出，觀眾是確保有效溝通的一大關鍵因素。

更詳細地說，傳統符號學假設的前提是，相關意義在文本當中是靜態的，並且獨立於社會背景之外 (Buckingham, 1993)。這種假設並未將符號學與教育中的創造力聯想在一起。但是，多模態社會符號學是將人們賦予的意義和社會環境及互動連結在一起，將社會這股動力引入意義建構領域當中 (Kress, 2010)。因此，Kress (2013) 提出一個不同的觀點，將人類做爲意義製造者 (meaning-maker) 的角色，放在溝通的意義建構過程中思考。由此觀之，教育也是一種溝通。想要瞭解如何辨識並培養學生在虛擬環境當中的設計創意，

首先必須確認學生的興趣與動機。多模態的基本假設是，「溝通與再現必然需要動用多種模式，而所有模式都有形成意義建構的潛力」(Jewitt, 2009, p. 14)。因此，我們透過多模態分析手法，檢視各種符號模式之內和之間的溝通與再現，這些符號模式包括語言、色彩、影像、聲音、人聲、運動以及三度空間物件。從這個角度來看，在虛擬世界創作者透過各種意義建構模式所塑造的設計過程中，迸發出所謂的創造力。多模態策略有助於提升藝術與設計教育當中的溝通效果，因為教師能讓學生透過不同模式展現個人創意。教師在學生的意義建構過程中做出的每一次回應，都意謂著教師支持學生的創意設計過程。

此外，多模態社會符號學一詞包含雙重焦點：「社會符號學」認為符號意義與知識建構都是社會背景下的溝通效果，與能供性 (affordances) 和限制性 (constraints) 有關。「多模態」認為模式是特定社群為了建構意義所採用的社會和文化資源 (Jewitt, 2015; Kress & Leeuwen, 2001)。對教學方法而言，多模態社會符號學的理论框架認為學習是一種符號製造過程，也是符號製造者 (無論是學習者、教師或學生，無論來自何種社會階級) 與社會及文化資源互動並產生符號後，所獲得的符號運作結果。這個概念也可用來理解 Deleuze (1994) 對學習的看法：「學習其實就是構成能與符號交會的空間，在這裡，分歧點藉彼此自我更新，而在區分自身之時就會發生重複」(p. 23)。從這個角度來看，當符號與回應出現時，學習也就發生了。如 Kress (2013) 所言，「沒有溝通式的互動，就沒有意義建構、沒有學習，沒有知識 (的變化)」(p. 122)，也就沒有創意之舉。如果從多模態意義建構角度出發，將 3DVW 視為培養創意的學習環境，我們可以探討兩個以溝通為基礎的教學假設：1) 由於所有模式的符號在 3DVW 當中都存有意義潛力，我們必須一併瞭解那些在虛擬環境設計當中，造成意義建構的個別模式與模式組合 (modal complex)。2) 由於「所有模式組合當中的符號都可被參與者用來當成提示」(Kress, 2010, p. 35)，我們必須探討學習者如何依據個人興趣，選擇 VW 當中的多模態資源做為提示，這其中包含能說明多模態資源所做的提示的互動關係。這種詮釋性互動就是 Kress & Bezemer (2015) 所謂的「轉化式參與」(transformative engagement)，在這過程中，團體成員從意義建構的角度，持續更新、重製並改變社交虛擬環境。既然提示的轉化式詮釋 (transformative interpretation) 能促使持續溝通，轉化式學習也可視為創意行為。



這就是為何我們要採取多模態社會符號學的溝通理論，來思考 3DVW 學習與設計實踐。具體來說，本文將以英屬哥倫比亞大學進行的一項 VCER（教育與研究虛擬社群）虛擬世界設計實踐，做為案例研究。

## 多模態設計實踐做為學習者的轉化式參與

Kress & Bezemer (2015)從溝通角度出發，提出兩種學習狀況。第一種是兩個符號製造者之間的溝通：這兩位做為符號製造者的學習者已接觸過教師、指導者、策劃者或任何學習機構提供的授課內容。第二種狀況則是學習者尚未直接接觸知識守門人（gatekeepers of knowledge）的授課內容，在完全缺乏此類溝通的情況下，自主發起並組織自己的學習。

線上多人 VW 同時提供這兩種學習範例。本文將藉第二種學習狀況來探討做為創意行動的轉化式參與。利用虛擬世界來發展藝術與設計教育的創意可說是相當新的研究主題，相關研究成果十分有限，而其中涉及多模態社會符號學的討論更是稀少。身為藝術與設計教育工作者，筆者將以 VCER 包浩斯虛擬學校的第一份多模態設計實踐做為研究對象。透過多模態社會符號學的角度探討多模態設計實踐的教學意義，目的是探索創作符號與提供符號資源的虛擬環境之間的符號關係。本文試圖透過這個過程，探究 VW 提供的豐富符號資源如何協助潛在的符號製造者進行轉化式參與，並獲得創意與創新成果。<sup>1</sup>



圖 1 VCER 裡的柯比意城市建築

圖 1 是 VCER 創造的包浩斯校園一景，這間虛擬學校主要教導大學程度的藝術與設計教育領域學生。圖片中有幾項三度空間元素，包括：三棟建築、

<sup>1</sup> 影片來源：<https://youtu.be/VMYz9JUG64Q>

圖 1 資料來源：[https://ubc\\_vcercer/region/Multimodality%20Learning%20Center/89/155/35](https://ubc_vcercer/region/Multimodality%20Learning%20Center/89/155/35)



一座山丘、行駛在軌道上的火車、指示板、公共廣場和藍天，這些都是這間學校的視覺元件。從多模態意義建構角度來看，這張圖片描繪了創作者的多模態設計實務與過程，可詮釋為學習的符號，而學習過程中的創意以不斷更新的符號形式出現 (Kress & Bezemer, 2015)。更詳細地說，此處的學習是透過符號製造者使用的符號達成，這些符號促使紀錄模式轉變成全新的虛擬再現形式。同時，這張圖片也讓指導者理解，這位 VW 設計新人如何詮釋來自真實世界的包浩斯學校。在建構虛擬環境之前，設計者花了兩週時間搜尋包浩斯學校的相關資料，包括其歷史發展、在藝術設計教育領域的重要性、學校的設計理念和作品，以及頂尖的包浩斯教師和設計者。在案例研究過程中，也進行田野調查筆記與素描。在 VCER 中，設計者利用紀錄當中的多種元素來創造虛擬包浩斯學校，加入動畫和互動元件，「重新設計」特定的影像、色彩、造型、設計主題和媒體形式組合(Cope, Kalantzis, & New London Group, 2000)。

我們必須思考包浩斯學校設計過程所涉及的社會與符號狀況。從敘述中可知，這所虛擬藝術與設計學校，反映的是建構者做為藝術家兼藝術與設計教師的專業身分，同時也顯示設計者/符號製造者的興趣所在，這些興趣就是特定符號資料庫的來源。從溝通視角來看，這位學校設計者之所以將藝術與設計教育初學者視為虛擬包浩斯學校的訪客，是因為他認定學習者應該吸收有關造型、色彩、三度空間構圖等方面的基本藝術與設計知識。從符號學角度而言，這間虛擬學校背景採用的「概念性排序再現」(Kress & Van Leeuwen, 2006) 模式，可視為一種符號組合，並且是根據符號製造者的興趣而組織形成；物件的物質性、環境背景及特定類型 (genre) 反映的是符號製造者對於包浩斯學校紀錄模式所提供的提示 (prompts) 的詮釋。

這套理論的多模態角度強調辨識模式之間的差異以及模式的使用方式 (也就是能供性)。例如，此座柯比意城市建築就是典型包浩斯風格的展現。建築位於照片中央，代表設計者在研究階段之所見。蒙德里安 (Mondrian) 的幾何抽象畫為由紅、藍、黃三色組成的構圖，後來成為包浩斯學校的教學主題，亦反映出新古典主義和烏托邦式設計風格。色彩元素顯現出設計者的觀察心得；移動的火車使用了動畫與互動元素，這輛 1920 年代風格的古老玩具火車與包浩斯學校來自相同年代，代表設計者所見的另一種再現範例。包浩斯創造的 san-serif 字體展現形式與功能兼具的包浩斯風格，並且刻意摒除裝飾性。這些書寫元素反映的是設計者的觀察結果。背景播放的是 1920 年代德國音樂，代表設計者聽見的聽覺元素。在檢視包浩斯學校的多模態設計成果時，我們可



發現藝術與設計教育  
的創造力：  
三度空間虛擬世界  
的多模態設計實踐

以瞭解與實體 (entities) / 集體 (unities) / 元素相關的模態間變化/傳導現象 (Kress & Bezemer, 2015)。因為設計者利用程式語言，將各種模態資源轉變成不同的資源 (將所見所聞轉變成 VCER 中的三度空間設計)，這些模式間的變化顯示轉變後模式與新製作模式當中的創意，必然能夠傳遞意義。

至於虛擬學校的動畫及互動三度空間物件與背景，設計者則是組合各種影像、文本與音樂，創造出一個可供虛擬分身社交互動的中介環境，可視為符號系統的多模態協作過程。例如，圖 2 顯示虛擬訪客坐上動畫繪製火車，準備展開柯比意城市大樓參觀之旅；圖 3 描繪訪客正在觀看一支介紹包浩斯設計理念的插入影片；圖 4 當中，有位訪客正準備播放背景音樂。

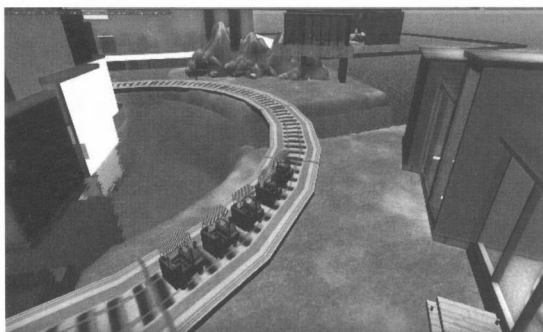


圖 2 坐在 VCER 的動畫移動火車上



圖 3 在 VCER 觀看 YouTube 影片

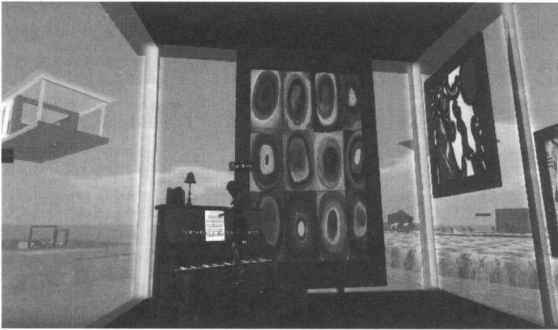


圖 4 在 VCER 播放音樂

圖 2 至 4 來源：

[https://ubc\\_vcer/region/Multimodality%20Learning%20Center/89/182/35](https://ubc_vcer/region/Multimodality%20Learning%20Center/89/182/35)

從多模態意義建構角度分析，這三張圖片擴展了設計實務的範疇，將符號組合與虛擬環境間的符號關係納入討論當中。首先，動畫與互動物件及背景顯示設計者樂於將虛擬世界參與者的「重新扮演（re-enactment）」當成能供性（Kress & Bezemer, 2015, p.163）。此外，虛擬包浩斯學校的互動式再現手法，不僅帶來有別於其他真實世界設計作品的另一種溝通可能，同時也顯示修辭內容可能透過社交互動，被持續重新建構並展現創意。在社會符號學多模態敘述中，電腦中介環境裡的虛擬分身溝通模式，讓我們有機會探索個人與符號物件之間的關係，並檢視互動之後所建構的社會實踐。若想瞭解互動過程所建構的修辭內容，我們可以觀察指導者與學習者對於哪些提示有所反應。虛擬參與者的手勢、凝視、表情、語音交談和書寫文本等，都是在重演虛擬學校提供的活動。從符號學角度來看，這些反應是虛擬參與者詮釋這些模式後所製造的外顯符號，再將這些符號轉變或傳導為新的符號組合。如前所述，不同模式帶來意義建構所需的不同符號資源，而每種模式都將注意力導向不同的再現內容。因此，不同的動畫與互動模式會透過不同方式塑造和建構每位虛擬分身於虛擬世界中的參與狀況。

簡言之，從這個多模態設計案例的分析與描述當中，我們可以清楚發現，VW 可提供各種多模態符號資源做為意義建構的基礎。從社會符號學多模態理論來看，虛擬設計實務當中的創意，本身就是一個讓設計者利用含有提示的社會與文化先備經驗、事件和材料的複雜過程。同時，社交虛擬環境提供具有目的（motivated）的多重模式做為意義來源，透過創意及想像方式，篩選、詮



釋、重新設計並轉變成新的模式組合。從社會文化溝通角度而言，Vygotsky (1950/2004) 的日常創意概念便是透過轉變與重組而形成的新創意整體思想，其中包含理念、概念、經驗、影像和其他社會建構元素。不過，值得注意的是，若沒有 VW 提供豐富且無區別性的多模態符號資源，便不可能達到並體驗這等與內省及人際之間的理解和知識相關的具體互動式藝術表現。因此，我們應將這種科技融入藝術與設計教育領域，讓學生透過新的感知、感受和詮釋世界的方法，產生更有創意的多模態設計。

### 透過多模態設計實務認知學習者能動性

越來越多來自各領域的教育工作者和研究者開始探索 3DVW 的強大教學潛力。(Baker et al. 2009; Barab, et al. 2001; Freitas & Veletsianos, 2010; Gaimster, 2008; Han, 2015; Lu, 2013; Salmon et al., 2010) 這種潛在趨勢帶來各種探索性和娛樂性學習活動，培養學生在設計過程中的創意，活動包括打造互動式三度空間虛擬物件和環境、選擇不同選項來改變虛擬分身的外觀、穿著、造型與視角，並利用不同的互動方法來溝通。從多模態社會符號學角度觀之，這代表教學正轉變成 VW 多模態設計過程當中的創意行動。同樣地，由於符號製造者處理的是來自社會層面的社會建構符號，因此可以辨識出符號製造者的能動性與身分所產生的符號效果 (Kress, 2010)。

此外，上述討論顯示，包浩斯學校的多模態設計成果反映出 VW 設計新人的轉化式參與。這種參與說明設計者與虛擬環境的互動方式、反映出設計者對於特定時刻的興趣，並指出持續更新符號資源所帶來的創意。在此框架中，設計者/符號製造者對於虛擬世界特定部分的興趣有其重要性。設計者使用的所有符號模式即顯示注意焦點塑造出提示的方式。同樣地，「從社會符號學看溝通與再現，所有符號都是新製造的隱喻符號」(Kress, 2010, p. 55)。因此我們可以說，包浩斯學校的再現設計代表設計者與虛擬環境的提示互動之後所產生的符號成果，體現設計者對於符號/符號組合的特定形成時刻的明確興趣。

基本上，關注符號製造者興趣的主要教育目的是辨識並塑造年輕設計者的能力，使其能力符合他們的能動性以及探索和設計 VW 的興趣。透過這種辨識和塑造工作，教師方能發掘設計學習者身上的創意行動、認真對待學習者產生的所有符號，並一路支持他們的創意過程。Gürsimsek (2014) 使用多模態社會符號學架構，以分析虛擬世界中的協同創作與協同設計實務產生意義的方式。同樣地，我們也可以用這套框架來檢視設計學習者在 VW 中製造的所有



符號。更具體而言，學習者的多模態設計是受到虛擬世界科技啟發的全新符號組合與延伸。所有手勢、書寫語言和言語、音樂、影像和虛擬分身的外觀都是全新製造並具有目的（*motivated*）的符號與符號組合，其根據學習者的興趣結合形式和意義。因此，透過仔細檢視具有目的的符號與符號組合的紀錄，可以發現學習者的參與程度，並說明他們從虛擬環境中所獲得的個人經驗。這種教學法讓設計學習者的興趣能透明地呈現在他們的設計過程與成果當中，並讓教師認識到學習者在 VW 教育和其他領域中的能動性。因此，多模態社會符號學可視為一種「適當的評量/評估標準」（Kress, 2010, p. 182）。在要求設計學習者展現能力時，設計學習者能製作出具有充分新意義的再現形式（*formulations*），同時也有助於學習數位產品，瞭解專業人士如何製作虛擬和真實世界中的設計作品。

## 侷限

雖然多模態社會符號學能夠以全新的視角辨識並塑造數位教育環境中的創意，但有些人認為，多模態這個概念是「一種語言帝國主義，把外來的語言學術語強加在一切事物上」（Jewitt, 2015, p.265）。這似乎讓多模態分析變成一種狹隘、語言學性質的分析手段。但是，多模態社會符號學的假設前提是，符號的意義是人類在特定時刻與特定社會背景下，選擇並設定各種模式後所產生（Jewitt, 2009）。因此，這套理論適用於人們用來產生意義的多種多模態符號學系統。

## 結論

在辨識藝術與設計學習者在 3DVW 中的多模態設計創意脈絡上，多模態社會符號學提供兩大重點：1) 著重將 VW 多模態元素當成符號資源，以複製新建構的符號與符號系統；並且 2) 強調設計學習者/符號製造者在社會虛擬環境中的能動性。這兩個重點都可用來說明為何 3DVW 能夠成為培養學生創意的搖籃，並將 3DVW 運用在藝術與設計教育的目的、過程與評量工作中。

我們可以觀察並分析設計領域學生如何在自己興趣的引導之下，體現自己的特色，透過虛擬分身親身參與 VW 的多模態資源，同時還可瞭解如何在面對新組合的多模態設計產品時，將這種參與詮釋成一種與學生的身分認同、互動、轉變，以及想法、價值、觀念、經驗與想像的具體化皆有所關聯的具體社

會實踐。Walsh (2007) 認為，為創造新意義形式而結合的多重符號模式，本質上便具有創意價值。因此，透過多模態社會符號學，3DVW 能夠提供更具吸引力的多模態設計機會，協助辨識學生的能動性，而這種以學生為中心的延伸式學習經驗，正是傳統藝術與設計教育無法給予的。如果我們將創意視為一種意義建構，創意來自持續不斷在學習環境中進行轉化式參與的過程，則教師與學生便能夠從 3DVW 當中發掘更多創意潛力。

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