

# Teaching Camera Craft Online during the Covid-19 Pandemic

By

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## 1. Abstract

This paper identifies and explores the challenges of teaching specialist camera and studio craft based production courses online given the Covid-19 pandemic. The Covid-19 pandemic resulted in all courses at the National Centre for Computer Animation, Bournemouth University being delivered online rather than face-to-face. This was particularly challenging for the units that involved camera production.

This paper will explore the different strategies used to deliver online three different camera based units with very different intended learning outcomes; a) Visual Storytelling and Previsualisation, b) Visual Studies, and, c) Visual Effects Photography and Acquisition.

A novel teaching model emerged that allowed for enhanced student engagement and practice whilst working within the constraints of inaccessibility to specialist camera equipment and location work. This can be summed up as an iterative spiral model; Introduce>Set>Practice>Reinforce>Assess>Feedback

The resulting outcomes, both in terms of the teaching and delivery approaches as well as the student work will be discussed and analysed.

## **2. Introduction**

One of the key elements of success behind the degree courses delivered at The National Centre for Computer Animation (NCCA), Bournemouth University, UK has been the underlying philosophy of “Technology in the service of the Arts” (Comninou et al. 2010). The production based courses delivered as part of the curriculum at the NCCA help students gain considerable hands-on practice with the production tools. These include a number of camera based units; “Visual Storytelling and Previsualisation” is a first year, first semester unit on the BA Visual Effects course that utilises camera based studio workshops to illustrate key design concepts as they apply to storytelling, as well as providing technical craft experience of camera and studio lighting. The “Visual Effects Photography and Acquisition” course builds on these design principles and camera craft, offering a deeper understanding and more rigorous practice into camera acquisition and practical effects in areas such as greenscreen filming, matchmove, set survey, capturing high dynamic range panoramas for light referencing, 3D scanning, miniatures, light match and camera match. The “Visual Studies” unit taught in the second year of the BA Computer Animation Technical Arts utilises photography, drawing and painting as tools for deconstructing and understanding natural phenomenon and real world object properties. The students embark on a self-led visual research project complemented by photography and drawing workshops. The UK lockdown due to the Covid pandemic in March 2020 resulted in all courses within the NCCA switching to online only delivery.

## **3. Challenges and constraints**

The NCCA responded very quickly to the first lockdown and within a week, all of the teaching delivery had moved online. Two remote login solutions were made available to students and staff in order to allow them to access specialist software. The main challenge, however, was ensuring that the intended learning outcomes for the camera and studio based units were not compromised going forward. All of the camera workshops for the academic year 2019-2020 had already been conducted before the March 2020 lockdown and so the key challenge was preparing for delivering the camera based units for the academic year 2020-2021.

Given the uncertainty due to Covid-19, the plan for the academic year 2020-2021 was to continue all teaching online whilst being prepared to deliver camera workshops in person as and when it was safe to do so.

Considerations needed to be made for international students as well as UK students who were not present in Bournemouth. This was particularly challenging as not only Covid-19 restrictions for countries, but local restrictions within the countries were a factor.

It was not possible for students to assist each other as crew members. The inability for students to do group work due to lockdown restrictions was another major issue as students could only work indoors within their place of residence or private garden using the people they lived with as actors.

The key concern in terms of meeting the intended learning outcomes for these units, however, was ensuring that the lack of hands-on camera practice did not compromise the education value gained from experiential learning (Crawford 2010). Given that camera



phones have become ubiquitous today meant that all students at least had some way of practicing photography and filming even if they did not have a DSLR or compact camera.

Finally, there were also issues related to technology; internet speeds, connectivity and computer hardware issues could also potentially compromise the student learning experience. One way around this issue was to provide asynchronous delivery where video lectures and learning materials were provided prior to the online sessions and the online sessions were used as seminar or feedback sessions. However, this approach had had limited success in the past with face-to-face delivery as a number of times students came to sessions without having gone through the prescribed learning materials for the session resulting in compromised discussion sessions.

#### **4. The ISPRAF teaching and learning model**

The delivery of the “Visual Storytelling and Previsualisation” and “Visual Studies” during the first semester was conducted via synchronous online sessions. In each session, rather than covering a certain topic in its entirety, the topic was introduced and students were set learning material and video tutorials to go through in their own time after the session. The students also had to complete an assignment prior to the next session where the topic was concluded, any student questions answered and feedback provided on the student submissions.

The weekly assignment ensured that: a) the students went through the learning material that was set as otherwise they would not be able to complete the task, and b) the students got the much needed hands-on practice with the camera that not only informed them of the practical implications of filming and photography but also provided a more engaging student experience based on experiential learning. Each online session, thus, concluded the previous topic going into further detail, followed by feedback on the student submissions. By this time, students could see exactly where the problems lay in their work. Providing feedback to the entire class meant that the students were able to learn from each other’s mistakes as well as their own. The second half of the session introduced the next topic and the next set of learning materials and weekly assignment were set. Each weekly assignment built upon all of the previous topics covered. For example, a week five assignment for “Visual Storytelling and Previsualisation” not only covered the topic “colour”, but also built upon the “photographic exposure”, “shot sizes”, “camera angles” and “lighting” topics that had been covered over previous weeks. The students thus honed their camera practice every week adding more to their craft arsenal (see Figure 1 – Figure 3).

*The ISPRAF model:*

<b>Introduce</b>	the topic
<b>Set</b>	the supplementary learning material and assignment
<b>Practice</b>	the assignment using a camera/camera phone
<b>Reinforce</b>	the student knowledge by emphasising any common problem areas, deficiencies and concluding the topic
<b>Assess</b>	the results of the assignments submitted
<b>Feedback</b>	provided to the entire class

The “Visual Effects Photography and Acquisition” unit delivery in the second semester was modified to a more asynchronous approach with the lecture and tutorial videos being provided and weekly assignment being set prior to the online sessions. This approach helped reduce technical issues related to live online delivery such as slow internet connections or lagging computers at the instructor’s or students’ end. The live online sessions were used to answer any student questions as well as to provide feedback to students on their weekly assignments.

## **5. Student view: Visual Storytelling and Previsualisation, and, Visual Effects Photography and Acquisition by Jiwon Chun**

Online learning actually went better than I expected and Rehan’s way of teaching worked really well for me.

For Visual Storytelling and Pre-Visualisation, what worked the best from his teaching was practicing and getting feedback on the practice we did. Being able to practice helped me remember the concepts we learn much longer than just us sitting and listening. And showing the work to Rehan helped us improve on what we can do better because he points out things that we might have missed while practicing.

By doing these practices and getting feedback, I could really get a chance to find out what I was missing and it only helped me learn better which eventually allowed me to refine my final work.

## Practice Work

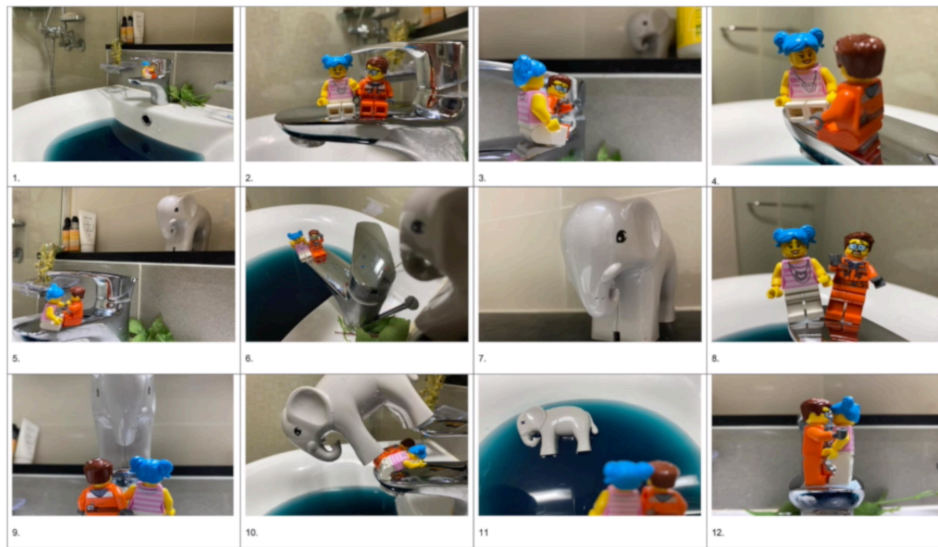


Figure 1: Visual Storytelling and Previsualisation unit week 7 storyboard by Jiwon Chun

## Practice Work

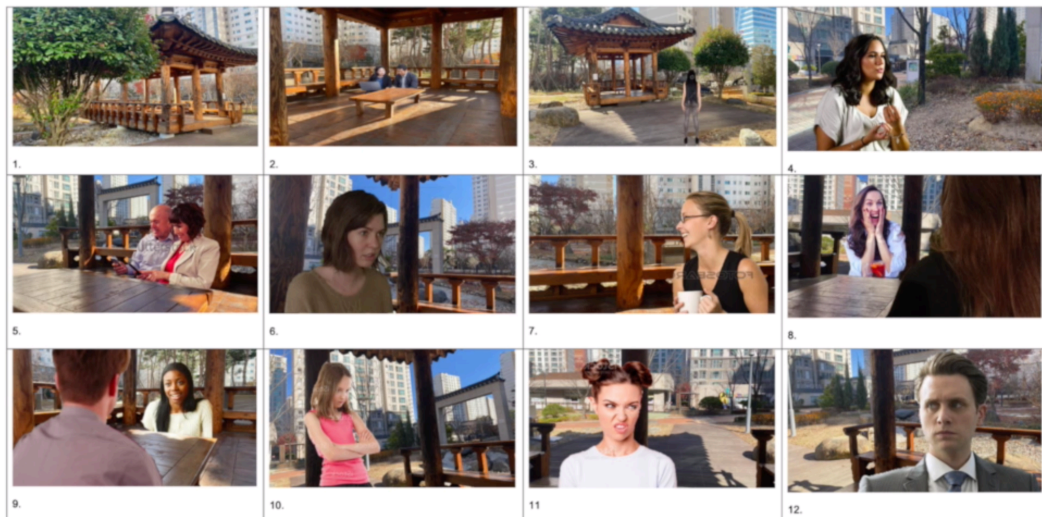


Figure 2: Visual Storytelling and Previsualisation unit week 7 storyboard by Jiwon Chun

## Final Work

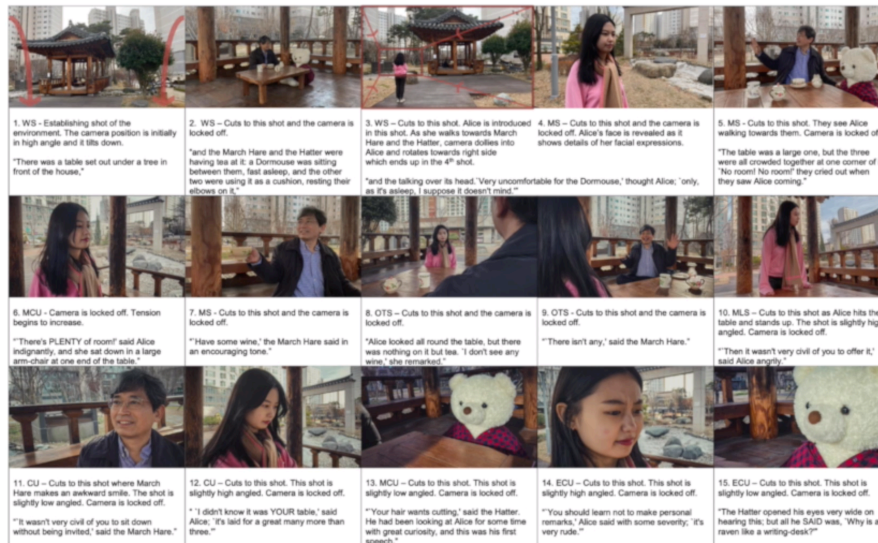


Figure 3: Visual Storytelling and Previsualisation unit final storyboard by Jiwon Chun

For Visual Effects Photography and Acquisition, Rehan's way of teaching was the same as the other unit so the benefits I previously mentioned worked the same. But the difference was that this unit involved a lot of software learning, and he taught us by uploading pre-recorded videos and having a Q&A session afterward. This worked better than having a live session because depending on the internet connection, the screen share would have a slight delay and the screen would sometimes be too pixelated for us to recognize anything. So having a video tutorial actually worked better than having it live.



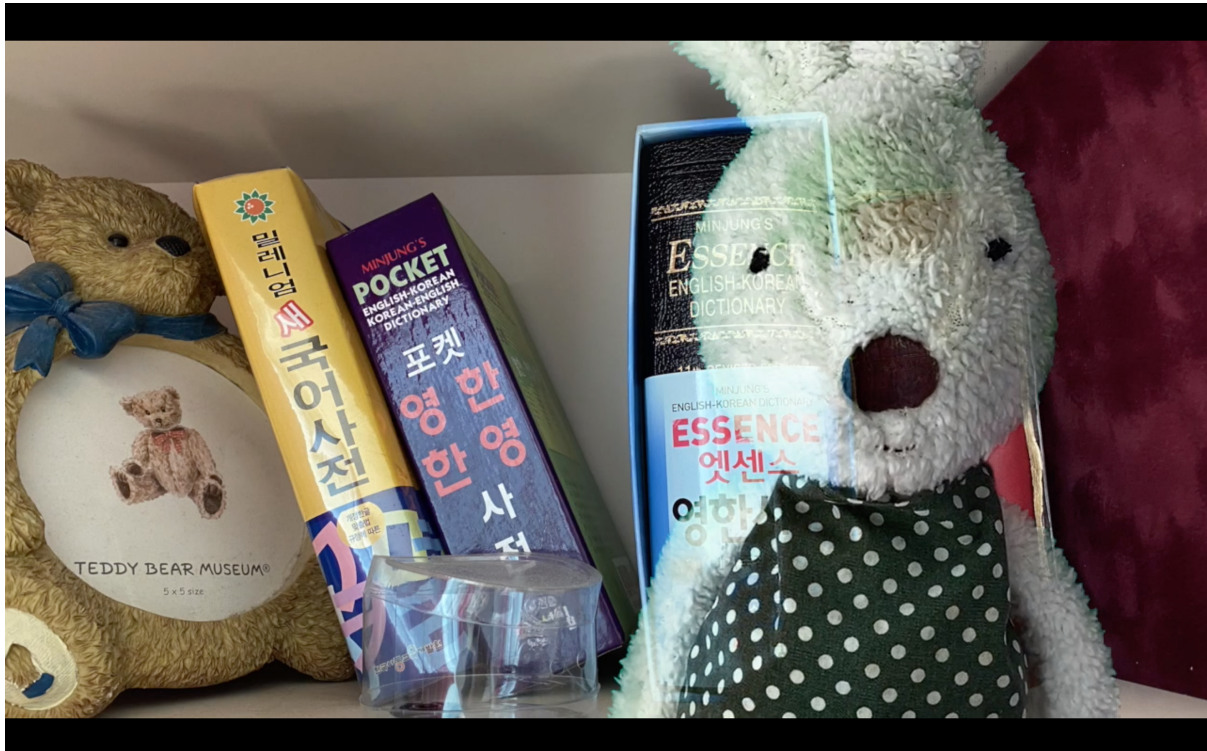


Figure 4: A screenshot of the Visual Effects Photography and Acquisition unit keying assignment by Jiwon Chun. The footage from the camera phones and makeshift greenscreen setups were not perfect but helped understand key concepts, principles, techniques and workflow



Figure 5: A screenshot from Jiwon Chun's final assignment for the Visual Effects Photography and Acquisition unit demonstrating image-based lighting and camera matchmove filmed and photographed using a mid-range camera

Moving on to other benefits in learning online was that since I wasn't in the UK, I had different restrictions for my country and this allowed me to take photographs outdoors. And this meant that I didn't have the limitations which some of the students could have had.

But the challenge was that when learning involved practicing with cameras it obviously would have been better with DSLR cameras instead of our phones. But knowing the limitation, he utilized his resources to teach in the best way possible.

So overall, I'm really satisfied with his way of teaching. While not having access to certain equipment was the downside, being able to practice and getting feedback was what worked the best for me.

## **6. Student view: Visual Studies by Srilakshmi Balaji**

While school had taught me to exercise memory power to learn facts, Visual Studies took a different approach to learning, i.e., studying what you see. Being a visual person, I was quite excited about this subject as it involved observing and analysing from sight.

The weekly assignments gave me a heads up on how to go about it – observe, capture, and analyze. I carried out all my observations at Abu Dhabi West Corniche Road, my current residence, due to the COVID lockdown. We used our phone cameras in the beginning and were taught how to use the auto HDR settings on our phones to capture HDR images, which was our first assignment. I captured black and white images and then colour photographs, in both high dynamic range (HDR) and normal modes. The aim was to observe the difference between HDR and normal modes and the black and white versions were used to see the difference more clearly. We were taught a bit more on the colour balance and how the same shot can appear very different if the white balance is off.

During one of our lectures, the phenomenon of light was discussed and how lighting affects a scene. This had me pondering about how daylight changes the mood of a scene throughout the day. So, for the next weekly assignment, when we were assigned to study how the position and the colour of light source can affect a shot, I chose to observe natural light and how its direction and position of the sun can affect the intensity of lighting and tone of a scene. I shot these at the same locality in Abu Dhabi, using Sony NEX5 camera, at different times of the day. Observing the change in colour temperature and intensity of lighting was quite intriguing, although it is an everyday phenomenon. I had also captured the Abu Dhabi skyline at the same time. Due to the location of Abu Dhabi, the duration of sunrises and sunsets very short as observed in these pictures, it gets dark in a matter of a few minutes.

These two assignments gave me clarity on how to observe natural lighting in an outdoor environment as my final assignment topic. I carried the assignment forward in three iterations – first, observing the change in direction and intensity of light, then observing the colour change, and finally, recreating rendition techniques for HDR scenes using photography and painting as a conclusion that put all the attributes studied and my observations together.





Figure 6: Timeslice of the Abu Dhabi skyline by Srilakshmi Balaji created as part of the Visual Studies unit illustrating the light changes across the skyline

For the first iteration I had fixed my camera at a particular focal length and captured the Corniche Flag Post spanning one hour. Ironically, this being the view from my window, I had never noticed the shift in lighting this close and was observing the whole day.



Figure 7: Comparison of low dynamic range and high dynamic range colour and black and white photographs by Srilakshmi Balaji created as part of the Visual Studies unit

The second iteration involved observing the change in colour temperatures throughout the day and for this I had chosen to study the scene with the Emirates Palace and Etihad Towers.

Luckily had captured the golden and the blue hours, the latter being a rare case here in Abu Dhabi.



*Figure 8: One of the images from the colour balance study by Srilakshmi Balaji created as part of the Visual Studies unit*

The third iteration aimed to produce HDR images, through three different techniques – Auto HDR, HDR toning and painting from observation. Auto HDR is an automated setting in the camera, while HDR toning is a manual method of combining different exposures to create HDR images, which is a better method. I had also painted from observation using oil paints, which took me two hours for a base sketch and a weeks' time to add in the details.





Figure 9: Stack based high dynamic range photograph by Srilakshmi Balaji created as part of the Visual Studies unit to study light, tone and colour



Figure 10: Oil painting by Srilakshmi Balaji created as part of the Visual Studies unit to study light, tone and colour

My lecturer, Rehan had suggested me to carry out HDR toning and encouraged me to paint from observation. He gave me great feedbacks and confidence to paint after a long time. I had so much fun carrying out all the iterations and this subject taught me to observe with an open mind.

## 7. Conclusion

The ISPRAF model developed for camera production based teaching has proven to be quite successful in terms of reinforcing concepts by a) allowing students to practice the craft techniques and workflow, b) gaining confidence by working independently, c) engaging with the subject given the hands-on practical element that they found quite enjoyable, and d) providing flexibility to study and work at their own pace and time. Although this approach came about as a response to online only teaching delivery, given its success we hope to carry on with this approach and use this model with face-to-face teaching as well.

## 8. References

- Comninos, P., McLoughlin, L. and Anderson, E. F., 2010. Educating technophile artists and artophile technologists: A successful experiment in higher education. *Computers and Graphics (Pergamon)*, 34 (6), 780–790.
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