Exploring the impact of divergent thinking approaches on team-based problem-solving: a case study of 2nd year media production students creating a live camera feed using a public 5G network.

Abstract

This research paper presents an analysis of a collaborative task completed by students, which involved broadcasting a live camera feed from the Blue Peter Gardens at Media City UK to their Mac Studio using a 5G Public network. The paper focuses on the divergent thinking strategies employed by the students during the session, which involves exploring multiple perspectives and possibilities to generate solutions to a problem. By analysing the students' use of divergent thinking strategies, the paper provides valuable insights into the cognitive abilities required for success in various fields.

The study emphasizes the importance of cultivating a culture of collaboration and creativity in educational settings, where students can learn and apply different problem-solving strategies to real-world challenges. The exploration of divergent thinking strategies highlights their potential impact on students' academic and professional development. Overall, this research contributes to the growing body of knowledge on the role of divergent thinking in fostering innovation and success in diverse fields.

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1. Introduction

As the module leader and lecturer for the FDA and BA (Hons) Media Production degrees at the University Centre, Salford City College, validated by the University of Salford, I oversee a group of 8 2nd year FDA media production students with varying levels of technical and scholarly proficiency. Within the academic year, students are required to complete six modules, including the TV Studio Production module, which takes place in the 2nd semester.

To successfully complete this module, students must produce a live 30-minute news show, incorporating opening and closing titles, lower thirds, one hard and one soft news pre-recorded package. In addition, they must perform a live outside broadcast interview over the public 5G network, which they will then cut from the studio to the location. To prepare students for this module, a 12-week scheme of work has been developed, which includes weekly lectures on TV studio workflows. These lectures cover a range of topics, including traditional TV studio and IP remote workflows. The aim of these lectures is to assist students in achieving the intended learning outcomes specified in the module's guidelines.

2. Method

In the week leading up to February 13th, 2023, I taught the fundamental concepts of 5G and video over IP networking to students who were new to the subject. Given their lack of prior experience in IP networking workflows, I chose to keep my teaching approach at an introductory level. The delivery of the lecture was conducted in a formal face-to-face presentation lead setting.

After conducting a thorough reflection on my previous teaching session, I realized that the students' lack of engagement and comprehension of the material may have been not engaging since they were passively watching a keynote. This led me to recognize the need to incorporate more interactive and stimulating teaching strategies that would tap into the different types of intelligence, as described by Gardner's Theory of Multiple Intelligences. Specifically, I identified the need to focus on the interpersonal, intrapersonal, and linguistic intelligences to better engage the students in the learning process. To achieve this goal, I decided to assign a practical task to the students on February 13th that would require them to utilize Gardner's Theory and Divergent Thinking (Guilford 1967) to successfully complete a complex task.

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This task required the students to work effectively as a team, collaborating and communicating to ensure the smooth transmission of the live feed. The limited equipment provided added an additional layer of complexity, requiring the students to be resourceful and innovative in their problem-solving approaches.

3. Students Workflow

The students convened a meeting to discuss breaking down the assigned task into smaller stages.To help my students develop their camera operation skills, I utilized a scaffolding module "Zone of Proximal Development" (Vygotsky) during their first year of study.

The students focused on the intricate process of transmitting the camera feed from the Blue Peter Gardens to the MacBook Pro. This involved applying the knowledge they had acquired from the OBS (Open Broadcasting Software) lecture, which helped them draw upon key concepts related to video streaming and capturing.

The students acquired a 5G remote source to facilitate a dependable transmission of the camera feed to their MacBook Pro. To achieve this, they utilized their smartphone as a hotspot to link the 5G signal from their phone to the MacBook Pro.

The list of equipment included a Canon C100 Mk2 camera with a 24 to 125mm lens, a tripod, fully charged camera batteries, a fully charged MacBook Pro laptop, and the student's personal smartphones. In addition, they also required a USB-C cable and a USB to HDMI converter to connect the camera to the laptop.

Additionally, they delved into the technical details of the transmission process, discussing the various settings and configurations that need to be adjusted to optimize the quality and clarity of the camera feed. This included adjusting the video bitrate, which refers to the amount of data that is transmitted per unit of time, to ensure that the uplink and downlink speeds were balanced, and the video stream was stable.

This approach allowed them to bypass the need for a separate Wi-Fi network or ethernet cable and provided them with the flexibility to work from any location where 5G coverage was available. By utilizing this innovative solution, the students were able to capture and transmit the signal.

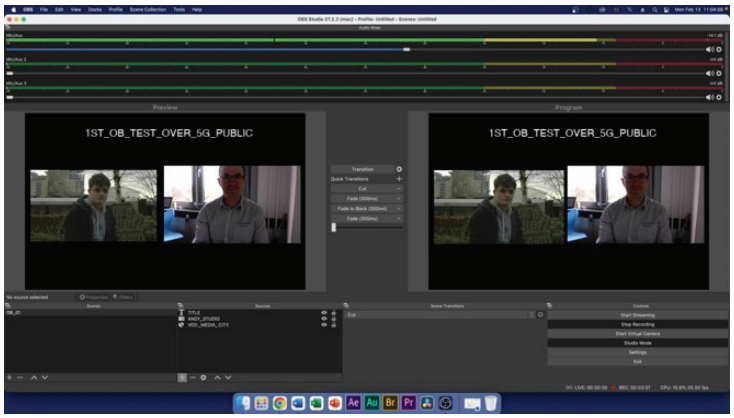
The C100 Mk2 Camera will be configured with an HDMI output, which will be connected to a video capture card. The output from the video capture card will be transmitted through a USB-C cable to the MacBook Pro. The video capture card acts as an intermediary, capturing and converting the signals from the camera into a format that can be transmitted to the MacBook Pro. The use of a USB-C cable ensures a fast and reliable connection between the camera and the MacBook Pro, allowing for efficient and streamlined transfer of data.

After successfully connecting the camera feed to their MacBook Pro, the students faced another hurdle. They needed to figure out which software they could use to transmit the feed.

They explored options like Teams and Zoom, but they encountered difficulties in monitoring the IP feed. Although NDI (Network Device Interface) would have been an ideal solution, they would have had to pay for it.

Undeterred, they persisted in their search and eventually stumbled upon VOD ninja, which turned out to be a game-changer. This software offered a peer-to-peer data point that didn't require a server, and it was completely free to use on a web browser. With VOD ninja, they were able to effortlessly transmit the camera feed without incurring any additional costs.

The students emphasized the critical role of having a reliable internet connection to ensure a smooth and uninterrupted transmission of the camera feed. They recognized that any disruptions or delays in the transmission could compromise the quality and accuracy of the data they were collecting.



The significance of employing divergent thinking strategies in real-world challenges where there is no clear solution cannot be overstated. This approach allows individuals to consider a wide range of possibilities and perspectives, leading to innovative solutions that might not have been possible otherwise.

Divergent thinking is the capacity to produce innovative concepts by merging various types of information in unique and unconventional ways. (Guilford, 1967) Research on divergent thinking has delved into a broad spectrum of themes, with one area of focus being the examination of its correlation with specific personality traits.

Fluency refers to the capacity to produce many ideas within a specified time frame. The ability to generate a high volume of ideas is considered a crucial component of divergent thinking, as it reflects an individual's aptitude for producing multiple potential solutions to a given problem.

Flexibility is referring to the ability to shift between different conceptual categories and generate ideas that are not limited to a particular area of knowledge. A flexible thinker can come up with creative ideas that are outside of the norm or conventional ways of thinking.

Originality is the third characteristic of these tests, which assesses the uniqueness and novelty of an individual's ideas. A person who can generate original ideas is more likely to think outside of the box and come up with solutions that are innovative and ground-breaking.

Finally, elaboration refers to the level of detail and complexity in which an individual can develop and expand upon their ideas. The ability to elaborate on ideas is indicative of an individual's capacity to think critically, identify potential challenges, and devise strategies to overcome them.

The location of the Blue Peter Gardens, situated in Media City UK, added an element of realism to the task, giving the students a taste of the real-world scenarios, they will encounter in the field of broadcasting. The tight deadline also simulated the time-sensitive nature of media production, where projects often have strict deadlines and time-sensitive deliverables.

My inspiration for utilizing divergent thinking practices come from the Apollo 13 mission, which serves as a testament to the importance of creativity and problem-solving in the face of life-threatening challenges. The crew of the mission faced a dire situation when they discovered that their ship had limited supplies, making it extremely difficuit to produce a carbon dioxide filter that was essential for their survival. The ground crew had to think outside the box and come up with a solution that involved exploring multiple perspectives and possibilities.

4. Results

I aimed to facilitate a more in-depth understanding of the material by encouraging students to analyse and evaluate information, rather than simply memorizing it. By promoting a more active and engaged approach to learning, I encouraged a greater sense of curiosity and intellectual curiosity among my students.

By utilizing divergent thinking practices, students can generate new ways of identifying solutions and achieve their objectives. This process of exploring different perspectives and possibilities can also help students to develop advanced technical problem-solving skills. Overall, the use of divergent thinking practices in real-world challenges is critical for fostering innovation and promoting success in diverse fields.

This task was proving to be a highly valuable learning experience for the students as it is not only helping them acquire essential skills and knowledge, but it is also providing them with a sense of fulfilment and enjoyment in the process and allowing my students to understand the basics of Transmission Control Protocol, which is a critical component of IP broadcasting.

The hands-on nature of this task is keeping the students engaged and motivated, as they can apply the cloud production switching techniques they learn in real-time. By experimenting with these techniques, they are gaining a deeper understanding of the world of IP broadcasting, which is essential for success in this field.

As the students hone their skills in TV studio production, they are discovering the intricacies and complexities of broadcasting. They are learning how to use various techniques and tools to create high-quality content that is engaging and captivating to audiences. This practical experience is invaluable as it is equipping them with the knowledge and tools, they need to succeed in the media production industry.

They are developing essential skills and a deeper understanding of the art and science of broadcasting, which is setting them on a path towards success in this dynamic and exciting industry.

Referances

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