Penerbit Akademia Baru

Journal of Advanced Research Design

Journal homepage:
https://akademiabaru.com/submit/index.php/ard
ISSN: 2289-7984

Applying Concurrent Engineering Concepts in Video Production for Resource-Limited Settings: A Case Study

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ARTICLE INFO

Keywords:
Concurrent engineering; video production; process improvement; digitalization; digital content development

ABSTRACT

The escalating importance of digital video content, particularly in areas like online learning, presents significant challenges in producing high-quality material efficiently, especially within resource-limited settings. Concurrent Engineering (CE), a systematic approach emphasising integrated, simultaneous design, offers a powerful model for improving efficiency and quality in product development. This study explores the potential application of Concurrent Engineering (CE) concepts in the video production process within such resource-constrained environments. Conducted as an exploratory case study, the research is based on real-world production data collected over seven years from 693 videos. The methodology involved embedding selected CE principles, such as performing tasks in parallel, ensuring early information exchange and verification before subsequent stages, fostering frequent communication and cross-functional collaboration, and strategically leveraging low-cost tools like mobile phones, free editing software, and cloud storage. This approach functions as a process improvement by aiming to streamline the workflow, reduce errors, minimize rework, and enhance overall efficiency and quality. The main findings, derived from the analysis of this extensive production data, demonstrate that applying these CE concepts led to significant reductions in production time. Furthermore, evaluation of output metrics, including viewer engagement and retention, indicates that videos facilitated by this CE approach tended to perform better, suggesting a positive contribution to the perceived quality and effectiveness of the content. This study provides foundational, real-world evidence for the practical effectiveness of applying CE principles in a non-traditional, resource-limited creative context, offering valuable insights for educational institutions and content creators facing similar production constraints.

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1. Introduction

The use of video in education has become increasingly important, offering significant benefits that can enhance the learning experience. Videos can improve the learning outcomes when added to the existing teaching style and it shows compelling learning benefits. Videos can also help students to understand and remember complex concepts [1,2]. Video used in higher education improves student learning depending on how it is used. The gains are ranging from small (g=0.28) to significant (g=0.80) [2]. The gain (g) which also known as the "effect size", is a statistical way to evaluate how much using video supports students to learn better in higher education. Videos such as educational films, training videos, and video demonstrations can assist in transferring knowledge, teaching problem-solving, and provide real-life, practical examples [3,4].

However, to produce high quality video contents requires a careful planning, skilled team, sophisticated equipment and extensive post-production workflow [5-7]. These will ensure that the editing process will be efficient and less time-consuming [8]. Moreover, the preproduction process for video development is also extensive for defining the style, scope and purpose of the video. The equipment needed are proper lighting, sound equipment and video recording devices [9].

Creating videos in a resource-limited environment is a challenge for academic institutions and small organizations due to technical, logistical and pedagogical issues [9-11]. Also, ensuring high quality and accessibility for students with disabilities is considered a challenge [8].

This paper focuses on the application of Concurrent Engineering concept in the video production process. Some steps of the video production process have the potential to be improved using the concept of Concurrent Engineering (CE). Indeed, the steps needed to complete a video, starting from the planning stage, video design stage (storyboard), acquisition of equipment and experts, the production process (shooting), video review, improvement and exporting, proof that the video production is a suitable candidate for the improvement using the CE concept.

CE integrates cross-functional teams in product development. Also, CE focuses on the simultaneous development of products and processes. This concept can be adapted to the video production process, and it will improve the collaboration and efficiency of the ecosystem [12-14]. Additionally, CE is proven to have systematic workflow management, and this is excellent for the video production process. This characteristic will improve the process planning, scheduling and real-time progress monitoring [15,16]. Moreover, CE can reduce the product development time and, at the same time, improve the product quality [17]. This is obviously the same goal as video production.

Furthermore, CE helps with the flow of information because all team members will be involved as early as possible in the project. This will enable the team to detect any fault or uncertainty as early as possible, and from here, they can customise their plan accordingly [18-20]. This characteristic will improve the performance of the video production process too. CE is not only practical for the manufacturing system [17] because the concept of CE can also be utilised in other contexts, including the video production. Indeed, the concept of parallel ways of working and integrated team efforts are very valuable for other fields too (refer to Figure 1).

Based on over seven years of experience and the production of 693 videos, this study demonstrates the application of CE in producing videos efficiently. This study is very beneficial for educators and content creators who are planning to produce videos in resource-limited settings.

1.1 Concurrent Engineering in Non-Manufacturing Contexts

CE has the proven ability to reduce the product development cost, shorten the development cycle and produce fewer mistakes and mismatches in final products [21-23]. The improvement in product

quality makes CE excellent for tolerance design [24]. Moreover, CE can increase the value of products and enhance the firms' competitiveness. Thus, making them very competitive in the marketplace and capable to generate more revenue [25]. To improve the performance of CE, there are efforts to embed blockchain and machine learning algorithms inside the CE core concept. This will result in better performance, adaptability and customization [26].

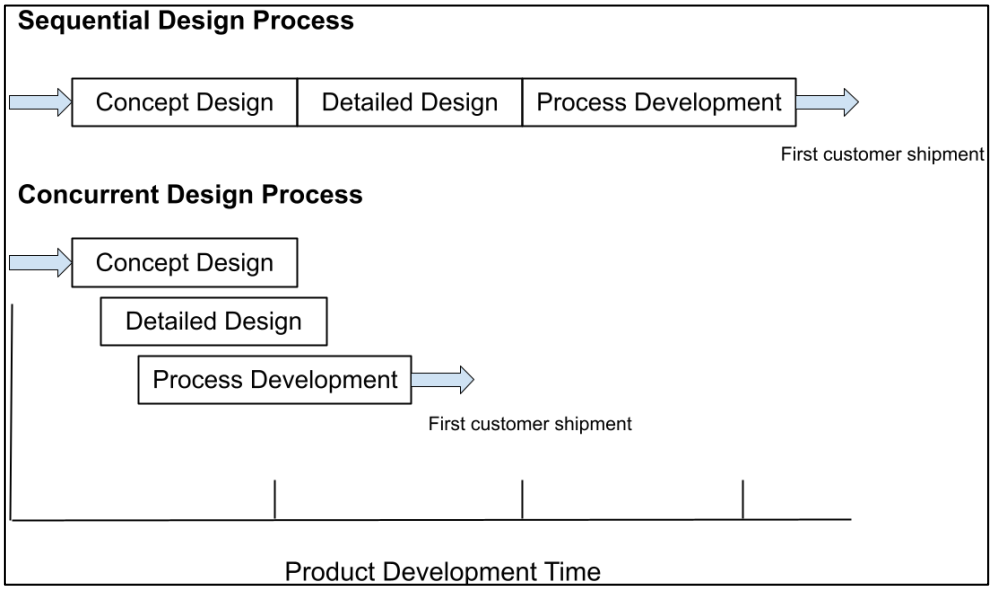

Fig. 1. Concurrent engineering is using parallel development technique [27]

CE's roots in manufacturing have empowered it to diversify into other fields like software development, multimedia production, and more. This adaptability exhibits that the core principles of CE such as integrating product design, production systems, and planning. These characteristics can be relevant to different areas to improve the efficiency and quality. In process industries, CE assists in improving productivity and quality by incorporating systems such as product design and production planning and control (PPC) [28]. Gunasekaran also explains that this integration improves workflows, ensuring a systematic production process and minimizing setback in decision-making.

CE has also been applied in the construction industry, where it reinforces productivity through integrated design of products and processes. However, this integration has initiating issues, such as performance evaluation within a CE framework [29]. This shows that although CE can enhance processes, it also needs specific performance benchmark to be fully functional in new environments.

In the field of sustainable mobility, CE is also able to create a transportation system that is not only well regulated, but also safe to the environment and equipped with the social responsibility [30]. This shows how CE's principles are compatible with broader purpose such as environmentally conscious, further perpetuating its impact.

Gong and Hao discuss CE's application in multinational enterprises, specifically in overseas research and development (R&D) practices. The study shows the usefulness of CE in global, synergic environments where product-oriented R&D efforts can gain profits from the concurrent and integrated techniques offered by CE [31]. The adoption of CE in automotive, aerospace, telecommunication, shipbuilding, and IT sectors exhibits its adaptability [32]. These industries, recognized for their complicated production processes and demand for precision, are perfect candidates for CE, which focuses on simplified production and strengthen cooperation between departments.

The concepts of CE have been integrated into Business Process Reengineering (BPR), directing to the advance of new tools and practices for process modelling and decision-making, specifically noted in aerospace applications [33]. This combination shows that CE not only improves product development but also converts organizational processes for more proficient operations.

CE highlights the ability to perform tasks in parallel and collaborating in cross-functional teams' environment. This will improve quality of products, cutdown the development time and lowering the production costs. In other words, the success of CE depends on the efficient techniques to overlap tasks and integration between cross-functional teams. The frequent and trackable feedback is also a promising way to ensure CE's success. Concurrent problem-solving and intersecting activities are vital for reducing development time and enhancing product quality in the context of incremental innovations [34-36]. Overlapping tasks can be beneficial for a condition with low uncertainty. However, it is not really recommended in a high uncertainty condition [34].

As for real-time feedback, the ability to perform two-way communication during the progress of a project will enable to detect any fault if available. The ability to communicate in real time and equipped with proper decision-making is very important for the success of CE [36-38]. A shared design data system will enable all team members to have the same vision for the project plan. In a formal design reviews, regular meetings are held to make sure all team members are sufficiently coordinated [12,37]. Having team members from different departments or job scopes is important for successful projects as depicted in the cross-functional teams' integration in CE [12,14,39]. Granting rewards to the whole team can encourage them to work together efficiently. The ability to let team members trying different job scope can help them to understand other member's work and this will assist in effective decision making. Organizing the project that suits the working conditions of team members can assist in overcoming distance challenges [37].

Overall, the adaptability of CE throughout the industries emphasises its value in improving the outcome, integration, and quality while embracing new challenges and goals such as the sustainability and global cooperation.

1.2 Video Production in Resource-Limited Settings

Developing a high-quality video is considered as complicated, especially in a limited-resources settings. This can be challenging at every stage of video making, from planning to editing. With limited resources, it will be demanding to source for the right equipment and a suitable location for video-shoot. During video editing, the ability to add special effects is also limited in a limited-resources settings. Outside a professional studio, educators and content creators usually don't have the specific equipment or instructions on how to make high quality videos. This scenario can be challenging for them to create high quality digital contents, and this will impact the final result in a negative way [9]. Video production can be time-consuming, and it needs numerous elements such as funds, team and equipment. It usually needs a significant amount of time to plan, film and edit videos. The resources needed are usually cameras, microphones, tripods, lighting, and computers. In the term of confidence, it is normal that some people might not feel confident in their ability to produce high quality videos. Additionally, the video making process need to be done with a team because the job scopes are too wide [40].

It is also crucial to keep the cost as low as possible during the video production process. It is also important to make sure that the video is engaging to watch, while making sure the cost is as low as possible. This scenario is extremely challenging because the team need to utilize the right tools and technique to reduce the cost [9,41]. Using the technology such as smartphones and cloud computing can assist in making videos within a resource-limited settings. The production team can exploit

special techniques such as perceptual-driven resource allocation to make the videos look presentable, even if they are using less sophisticated equipment [42]. Utilizing ordinary computers and minimal video equipment will simplify the video-making process for people and small businesses. This is because, ordinary computers and simple video equipment do not cost too much and easy to purchase. According to Johnston *et al*., the simple equipment is easy to use and this will enable the less tech-savvy people to produce high-quality and engaging videos [43]. The availability of simple to use editing apps and software also contributed to the same fact. Additionally, Castillo *et al*., highlighted that in order to make high-quality videos, the production team must understand some basic details about lighting, sound, camera-shot, and the equipment needed (refer Figure 2). The method to record and edit videos are also highly important too [9].

In this digital age, the number of videos available online is extremely massive and to get the attentions of the viewers is difficult. To come up with an engaging video, the production team must be able to craft a good story and ensure that the video is valuable to the viewers. Short-form videos are easy to watch and consume. This is considered one of the effective ways to capture the viewers' attention and encouraging them to share the videos [44,45]. To make educational videos more engaging, fun and interesting, the production team can mix the education aspects with the elements that the viewers already enjoy such as popular TV shows or movies. This will help the viewers to learn better from the videos hence making the videos adding values to their daily life [40].

During the preproduction of a video, it is crucial to plan out the information that the video will deliver. Next, the method of delivering the information via the video should be identified and the production team must be clear the main reason for making the video. These characteristics will ensure the clarity and purpose of the video. When the production of videos was done outside of a proper studio, the team should utilize the resources that they have in the most efficient way as possible. The production team needs to use the right setting for the lighting, sound equipment, and camera to produce a high-quality video. Ball *et al.,* also suggested to produce shorter videos (5 to 10 minutes duration) that focuses directly to the main point. This type of video will capture the viewers attention easily and the production can be less complicated. Additionally, Castillo *et al*., highlight the importance of editing the video thoughtfully to make sure the video flows smoothly. A high-quality editing job will help to present the information in a clear and organized manner [9,46].

During the video-making, it is crucial to be creative and innovative because it will enable the team to utilize inexpensive tools to get the job done. Learning to think creatively can encourage people to do better in their surroundings. The main reason is because creative thinking can lead to exciting, new and helpful ideas [47]. Additionally, several problem-solving techniques such as brainstorming, storyboarding and mind mapping can assist a person in becoming more creative and able to generate new and unique ideas. These kinds of ideas will make a video stand out from the others and able to capture the viewers' attention [48]. The ability to generate ideas quickly and creatively is very important when a company plan to release a new product. This capability will enable the company to come up with a better product compared to what the competitors are making. The company will also be able to stay ahead of the competitions and able to grasp additional market share [49]. The same scenario also applies in the video production environment.

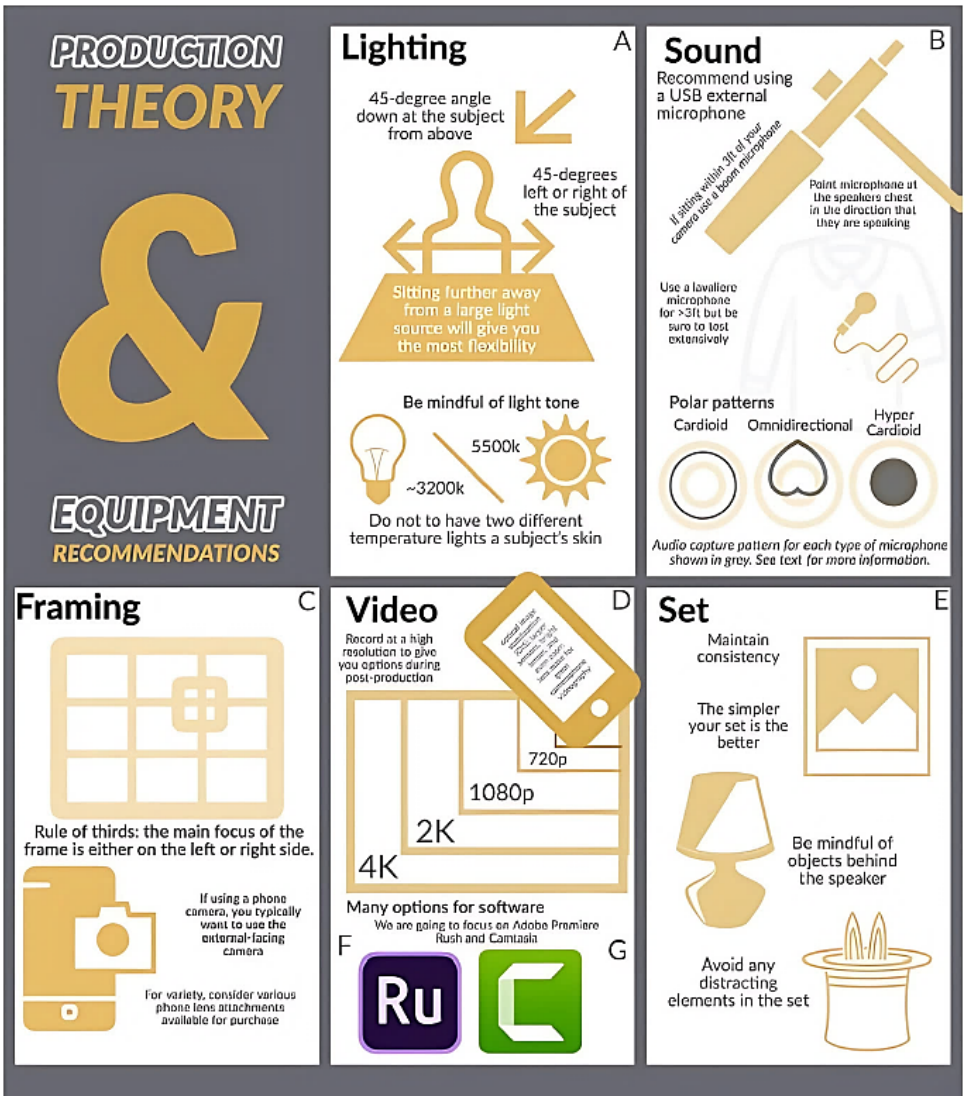

Fig. 2. Five important areas to consider during video production [9]

This paper discusses concurrent engineering (CE) and video production. As mentioned earlier, CE highlights the concept of doing tasks in a parallel way and not sequentially. Cross-functional teams must be involved from the early stage of the project. The communication and progress should be available in real-time mode. The author believes that the concept of CE is beneficial to video production. However, not many researchers have studied the method to integrate CE in video production. To address this gap and demonstrate the potential of applying CE principles beyond traditional manufacturing, this paper proposes and discusses a model that systematically applies established Concurrent Engineering (CE) theoretical frameworks to the video production process within resource-limited settings.

2. Methodology

2.1 Overview of Video Production Workflow

This study focuses on video production activities for over seven years and how the team is getting better from time to time. During the study period, the team managed to learn several ways to improve the quality of the videos. The process of making videos implemented by the team can be divided into several stages and it started with the process of video planning and storyboarding.

In this stage, the team plan out the main scenes and other materials needed such as footages, stock videos, stock photos, voiceover and others. This stage will help the team to stay organized and it will provide a clear visual of how the video needs to be produced.

Next, before making a video, the team will proceed with the material collection. In this stage, all necessary materials such as pictures, videos, and scripts were gathered in the cloud storage that can be checked and assessed by the video editor. All materials will be verified by the video owner or project manager. The verification stage is very crucial to identify mistakes or faults as early as possible. In the context of engineering, the ability to find faults early in the machine is extremely important. This can assist in preventing machine breakdown, keeping the people safe, establish the machine's maintenance schedule and ensure the machine operates in a better way [50,51]. The same principle also relevant to the video production process because early fault or mistake detection can prevent the high cost of video repair.

The next stage is the video editing process. To edit the videos, the team uses free software and apps such as Capcut for computer or phone. Both versions are exceptionally effective and have the pro and cons when it comes to the usage. The Capcut for computer is very flexible and it is suitable to edit videos that contains the recording from the computer screen such as the lecture and software demo videos. Moreover, editing videos with horizontal format (9:16) is effective when using Capcut for computer. The videos that contain a huge number of texts is also suitable to be edited using Capcut for computer.

In the other hand, Capcut for phone is very versatile when performing the editing videos (footages) that been shot using phones. These videos are usually the videos of event such as vacation, office events, product reviews, interviews, marketing contents and others. In some cases, the editing job performed on the phone is faster compared to the computer because the interface for Capcut apps is quite simple yet effective. The features for editing such as adding audio, cut, filter, setting speed, overlay, duplicate and others are easier to access because of the excellent user interface. To speed up the editing process, the video editor will save the presets and other commonly used features in the software or apps. These settings will accelerate the video making process and it will save the "decision-making" time for the editor.

Once the video editing process is completed, the video editor will show it to the project manager or video owner. If the team works remotely, the editor will record the screen of the edits and share the recording to the project manager or video owner. The person can watch the video and provide feedback after that. Any repair or amendment will be made by the video editor. To do some modifications during this stage is relatively easy and less complicated when compared to the modifications made after the video is rendered or exported. This is because, the video editor is still in 'editing' mode and not in the 'export' and 'post' mode. Based on our experience, the modifications or repair that needs to be done after export or posted to social media will result in a significant waste of time, funds, effort and motivation. It will affect the team in a negative way in the long run.

The final stage is rendering and post-production and this will be done once the project manager or video owner approved the video. This is where the final version of the video is made and after some years of video-making, the number of modifications or repairs to be made after this stage are gradually reduced. Finally, the social media manager will upload the video to platforms such as Facebook, Instagram, TikTok, YouTube and LinkedIn. Further, the video's links from these platforms will be shared in messaging apps such as WhatsApp and Telegram. In the other hand, the educational type videos will be shared in platforms such as MOOC, Micro-credentials and Learning Management System (LMS). The overall stage in the team video production process is shown in Figure 3.

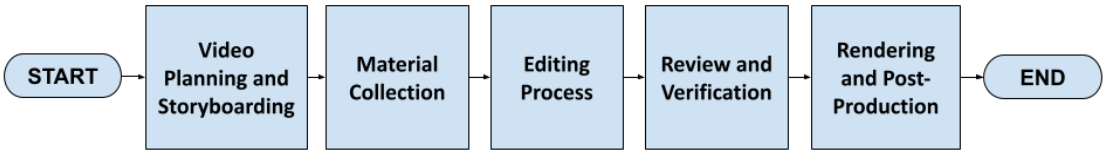

Fig. 3. The stages in video production process

2.2 Concurrent Engineering in the Workflow

To improve the video production process, CE concepts are embedded into the workflow. This paper will elaborate on the selected CE concepts and how they are embedded in the video production (refer Figure 4). The first stage to receive the CE concept is related to early information exchange and verification. In this stage, before the editing job commences, the team members must make sure that they have all the materials and resources that they need.

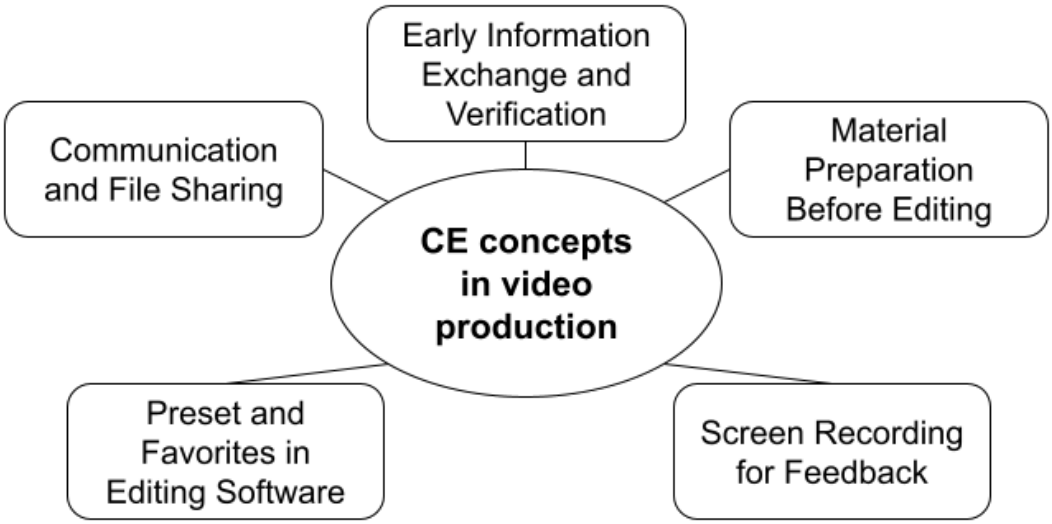

Fig. 4. The concepts of CE are integrated into the five selected stages in video editing

Another important point to note is making sure that the materials that they have are the right ones. Meaning that, the project manager or video editor should verify all the materials first before the editing process started. This step leads to less mistakes later and it will shorten the development cycle of a video. Additionally, this will also avoid the editor to stop editing to search for additional materials or fix a mistake. When working using a computer or smartphone, the editor might get distracted by notifications, email, and watching videos online. This will affect the quality of work and the completion time [52]. This also applies to video editors who need to find additional materials online while performing the editing job.

The next stage is Screen Recording for Feedback, and this stage is performed after the editing is completed. Before proceeding to the final version of the video, the editor will screen-record the video and share the recording to the project manager or video owner. From here, the manager will be able to watch the video and suggest some changes (if any) to the editor. This step will save a significant amount of time because if the manager provides feedback after the video is rendered or imported, it will be more complicated to repair the video.

To speed up the video editing process, the editor should save the commonly used presets and items in the video editing software. Some people labeled these items as 'Favorites' and these items are stored in the easy-to-find location (directory). The presets are usually used in text settings,

effects, transitions, sound effects, video effects, logos and others. If the presets are properly saved and managed, it will reduce the editing time significantly. Another important stage for applying CE is Communication and File Sharing. To communicate better remotely, Whatsapp is one of the widely used platforms. The users of Whatsapp can communicate and share files in the apps and some used it as an information storage mechanism. However, the actual progress of a project is not suitable to be recorded in the Whatsapp. For that reason, project management apps such as Trello, Asana, Basecamp and others can be used. For storing and sharing files with large size, cloud storage such as Onedrive, Google Drive, Dropbox and Box are the best option. In addition, good practices related to remote communication and files sharing will result in a highly efficient video production process.

2.3 Data Collection

The team collected the information about 693 videos from five different Youtube channels. The videos were sorted into different categories. The first category is related to the purpose of the video and this category are divided into videos for tutorial, event, or leisure activities. Next, the videos are sorted based on the production techniques of the video. The techniques are camera-shoot, screen-record, or animation. The camera-shoot technique mostly is shot using the phone. The screen-record were mostly from the recording of the computer screen using a screencast software. As for the animation, these types of videos were made using an online design and publishing tool such as Canva or a video editor such as Capcut. The third category is whether the video needs to be edited or vice versa. Some videos just as screen-record do not need to be edited because most of the time, the quality is already acceptable.

To support the digitalization effort of higher educational institution, the videos made by the staff can be rewarded with a publication point. To be eligible for this reward, the video should follow some standards to be of higher quality. Some videos made in our study were developed to comply with such standards and usually, this type of videos will take longer time to produce. Therefore, the fourth category is whether a video eligible for the publication point or vice versa. Finally, to assess the video performance, the engagement metrics of the videos were tracked. The parameters included in this part are the number of views, average view duration and percentage viewed. These parameters indicate the number of viewers who watched the video, how long the viewers watched it, and how many percentages of the video that they watched.

3. Results and Discussion

3.1 Video Production Time Analysis

Based on the data that had been collected throughout the years, Table 1 shows the average time needed to produce the video. The data collected is based on the type of video, production technique and additional editing.

Table 1
Time duration for producing a video based on category

Type of Video	Technique	Editing Needed	Avg. Production Time (hours)
Tutorial	Screen Record	Yes	8-16
Event	Camera Shoot	No	4-8
Leisure	Camera Shoot	No	<4
Animation	Animation	Yes	8-16

By referring to Table 1, the videos from the tutorial and animation category took the longest time to produced. The reasons are the tutorial videos need a proper preparation before recording and once the video is recorded, the editing job needed is quite significant. Additionally, the tutorial video needs to be clear and detailed and as a result, it took some time to write the script or speaker notes. As for the animation video, a significant amount of time is needed to prepare the materials such as storyboard, script, captions, stock photos and videos. The animation making in the editor software also took some time because the editor needs to work with movements, keyframes, effects, audio and others.

The videos under 'Event' and 'Leisure' were quicker to produce and the latter category is significantly taking the shortest time. This is because the editing job for the leisure video is straightforward, and this type of video does not need to comply with the university publication standards. Furthermore, the videos that need to comply with publication standards took significantly extra time to be produced because the needs to include the university's logo, the details of developers, objective of video, additional captions, credits and outro video. The information to be included in the video must be correct and detail. This type of videos also needs higher-quality content that resulted in longer video shooting time. The analysis of video production times revealed a substantial difference between edited and unedited videos, as shown in Figure 5.

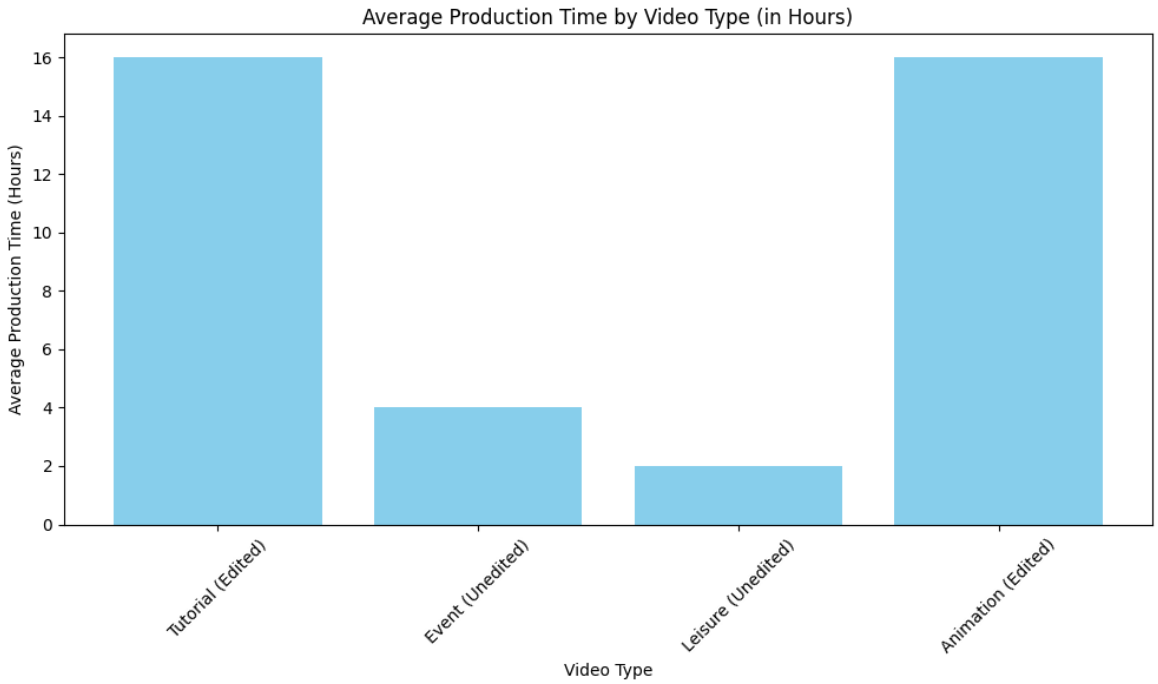

Fig. 5. The average production time based on video category

Based on the data, tutorial and animation videos, which needs extensive editing, require approximately 16 hours to produce. On the other hand, event videos, particularly those that remain unedited, take significantly less time (about 4 hours). Leisure videos are the quickest, taking approximately 2 hours when no editing is required. This difference in production times shows that editing is the most time-consuming phase of the workflow.

The integration of Concurrent Engineering principles has facilitated improvements in production efficiency by emphasizing parallel processing and collaboration between stakeholders. For instance, the real-time exchange of information between video owners and editors reduced delays and the need for rework, which can be particularly costly in a resource-limited setting. Furthermore, pre-

production verification of materials (e.g., footage, stock images) streamlined the editing process, allowing for quicker turnaround times.

This analysis suggests that in environments where resources are constrained, the strategic application of concurrent engineering principles can lead to significant reductions in production time without sacrificing the quality of the final product.

3.2 Editing and Publication Eligibility

Videos that required editing or met publication eligibility criteria took significantly more time to produce. The breakdown of the data can be referred in Table 2.

Table 2
The editing time and video performance based on the category

Editing Required?	Avg. Production Time (hours)	Avg. Views	Avg. Percentage Viewed (%)
Yes	8-16	12,000	65%
No	4-8	10,000	60%
Eligible for Publication	8-16	15,000	75%

The videos that are eligible for publication were more time-intensive to create, but they tended to perform better in terms of views and engagement, as they met higher quality standards. Similarly, videos requiring editing took longer but generally performed better in terms of viewer engagement, indicating that well-edited videos are more likely to hold audience attention.

3.3 Video Engagement Metrics

To evaluate the effectiveness of each video, the team analysed engagement metrics such as views, average view duration, and percentage viewed. Table 3 shows the summary of these metrics for the different types of videos.

Table 3
Summary of engagement metrics

Video Type	Avg. Views	Avg. View Duration	Avg. Percentage Viewed (%)
Tutorial	15,000	2:30	75%
Event	10,000	1:00	55%
Leisure	20,000	0:30	45%

Tutorial videos consistently engaged viewers the most, with an average of 75% of the video watched. This demonstrates the value of educational content in keeping audiences interested. Leisure videos, while attracting more views overall, had a lower percentage of the video watched on average, suggesting less sustained interest. Event videos found a middle ground, with a decent balance of views and watch time, likely due to their shorter, timely nature.

Engagement metrics are critical for evaluating the impact and reach of video content, particularly in educational and tutorial settings. The two primary metrics considered were the average views and average percentage viewed. These metrics are presented in Figure 6.

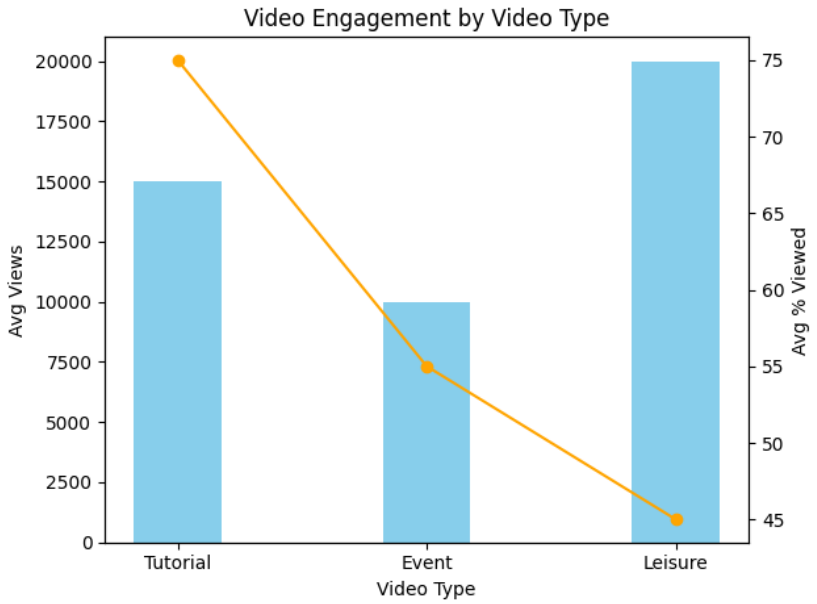

Fig. 6. The primary metrics for video engagement

The data shows that leisure videos garnered the highest number of views (20,000 on average), but had the lowest retention rate, with viewers watching only about 45% of the video. Conversely, tutorial videos, despite having fewer average views (approximately 15,000), maintained a significantly higher retention rate (75%). Event videos fall in between, with moderate views and retention rates.

This discrepancy highlights an important aspect of video production: quality vs. quantity. Tutorial videos, while time-consuming to produce, are more engaging for viewers, as evidenced by the high retention rates. This suggests that in educational contexts, the time invested in editing and refining content results in more impactful videos, even if they attract fewer views than shorter, unedited content. By optimizing production processes through concurrent engineering, institutions can reduce the time needed to produce high-quality content, which is especially beneficial for tutorial and educational videos that demand greater attention to detail.

3.4 Impact of CE on Workflow Efficiency

The introduction of CE principles into the video production workflow resulted in measurable improvements in both time efficiency and content quality. One of the key factors that contributed to this is the streamlined communication. The communication channels such as WhatsApp and cloud storage platforms (e.g., Google Drive) enabled seamless collaboration between team members. This reduced the time lag between initial concept development and final production, as approvals, feedback, and materials were exchanged in real time.

Moreover, CE highlights the importance of front-loading the verification of materials before production begins. This guaranteed that once the editing process commenced, there were minimum interruptions, saving time that would otherwise be spent on correcting errors or sourcing missing content. In this study, a crucial improvement was the use of screen-recording for preliminary video reviews. By sharing a near-complete version of the video before rendering, the editor could integrate any feedback at an earlier stage. This process diminished the need for major revisions post-rendering, which is typically more time-consuming and resource intensive.

In addition, by organizing frequently used assets (such as text overlays and icons) into editable presets, the editing process became significantly more efficient. This automation of repetitive tasks

allowed the editor to focus on higher-level creative decisions, further enhancing productivity. The cumulative effect of these changes resulted in shorter production times and an increase in content quality over time. As shown in the engagement data, these improvements translated into videos that were not only produced faster but also held viewers' attention longer—a critical factor in educational content creation.

4. Conclusions

Producing engaging and entertaining video content in resource-limited settings involves overcoming challenges related to limited guidance, time and resource constraints, technical issues, and viewer engagement. Effective use of technology, optimization of resources, and a focus on storytelling and educational value are key strategies to address these challenges. By leveraging these insights, content creators can produce high-quality videos that captivate and educate their audiences even with minimal budgets.

This paper discusses the integration of Concurrent Engineering (CE) concepts into the video production workflow to improve efficiency. The first stage involves verifying all materials before editing to avoid mistakes and delays. Distractions during editing, especially online, are noted as challenges that affect productivity. After editing, a screen recording is shared with the project manager for feedback to avoid complications later. Saving commonly used presets in editing software can significantly reduce time. Communication and file sharing through platforms like WhatsApp, Trello, and cloud storage ensure effective collaboration, enhancing the overall video production process.

The findings demonstrate that the application of concurrent engineering in the video production workflow can drastically reduce production time while maintaining, and in some cases improving, the overall quality of the content. This is particularly important in resource-limited environments where traditional video production setups may not be feasible. Educators and content creators can apply these strategies to optimize their processes, leveraging existing resources to create engaging and educational digital content efficiently.

Acknowledgement

The research was funded by a grant from Universiti Tun Hussein Onn Malaysia (UTHM) under the Research Grant Tier 1 (Q428).

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