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Developing Integrated Tourism and Travel System in China

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Abstract

China has a lot of tourism objects. Tourist visits from year to year have increased. The government, especially the tourism office, needs to collaborate to maintain and increase the growth of the number of tourists visiting China. This study aims to integrate information services from other parties collaborating to support tourism activities. Related parties are the tourism office, hotel, travel & tour agent, and tourism destination. The integration of information is intended to facilitate access to information by tourists following their needs. Observations run at the tourism office and destination in three different locations to obtain the needed information in Beijing, Chengdu, and Guilin. Object-oriented modelling is used for system analysis and development. A prototype is developed, integrating information between tourism office, hotel, Travel & Tourism Agent, and tourism destination. With the integration of such information, each party will obtain a marketing benefit, income, and other benefits.

Keywords: social, networking, education, evaluation

I. INTRODUCTION

China tourism and hotel industry is segmented by Type of Tourism into Inbound Tourism and Outbound Tourism, and Hotel into Economy and Budget Hotels, Mid-Scale Hotels, Upper Scale Hotels, Premium, and Luxury Hotels and Others (Shared Living Spaces, Rented Apartments, Service Apartments, etc.). The report offers market size and forecasts for China's tourism and hotel industry in Value (USD million) for all the above segments

The tourism is one of the key contributing sectors to the China's economy and is largely dominated by the inbound tourism. The comprehensive contribution of China's tourism industry to the total Gross Domestic Product (GDP) has steadily increased over years. The overall contribution of the tourism industry to the total GDP is an important indicator of socio-economic development and industrial structure observation. In 2019, the comprehensive contribution of China's tourism industry to GDP was CNY 10.94 trillion,

accounting for 11.05% of the total GDP, reaching a record high since 2014 from 10.39% in 2014 to 11.05% in 2019. However, despite the increase in tourist arrivals, the occupancy rate of rooms in hotels also declined. In addition information from stakeholders between tourism office, hotel, travel & tourism agent and tourism destination has not seen any cooperation and collaboration in exchange and information integration. The intended collaboration is the integration or exchange of information from the tourism, hotels, travel & tourism agent and tourism destination. Such information is used on the website of each party [1].

1. Tourism

Tourism is travel for pleasure or business; also the theory and practice of touring, the business of attracting, accommodating, and entertaining tourists, and the business of operating tours. [2] The World Tourism Organization defines tourism more generally, in terms which go "beyond

the common perception of tourism as being limited to holiday activity only”, as people “traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure and not less than 24 hours, business and other purposes”. [3] Tourism can be domestic (within the traveler’s own country) or international, and international tourism has both incoming and outgoing implications on a country’s balance of payments.

A “web service” is a generic term for a software function hosted at an addressable network location. In this general sense, it can imply a Cloud-based service, a Utility service, or even a departmental application [4]. Web service concept articulated for three types:

SOAP (“Simple Object Access Protocol”) Is an exchange protocol used by independent applications from every platform, with XML language.

WSDL (“Web Services Description Language”) using XML format with methods.

UDDI (“Universal Description, Discovery, and Integration”) standardizes a solution of distributed Web service directory, the publication and the exploration allow.

However, the JSON community often uses a more general term when describing JSON-based services. JSON web services use the term in its generic sense. [5]

II. RESEARCH MODEL

System development is done by following the Waterfall stages of Software Development Life Cycle [6] there is an increasing demand for more rigorous and systematic approaches to develop security critical software systems across the globe. The complexity of the software system is rapidly raising due to the inclusion of properties like security and reliability. The process of software development complicates with the raising complexity of the software system. As a result, formal methods are currently used to model complex security critical systems. Literature reveals that formal methods can be applied at various points through the development process. Their tools can provide automated support, needed for checking completeness, traceability, verifiability, reusability and inconsistency management of requirement specification, which is the backbone of entire SDLC. Accordingly, there appears a need for a critical review of these formal methods. The

paper presents a brief discussion on various formal methods particularly Z-method, B-method, VDM, OBJ, Larch and Communicating Sequential Process etc. along with their strengths and weaknesses followed by a comparative study on the basis of the review results. The present research work may help the software developers to provide their recommendations for using formal methods at different stages of software development and particularly for requirements phase, based on the specific requirements of an organization.

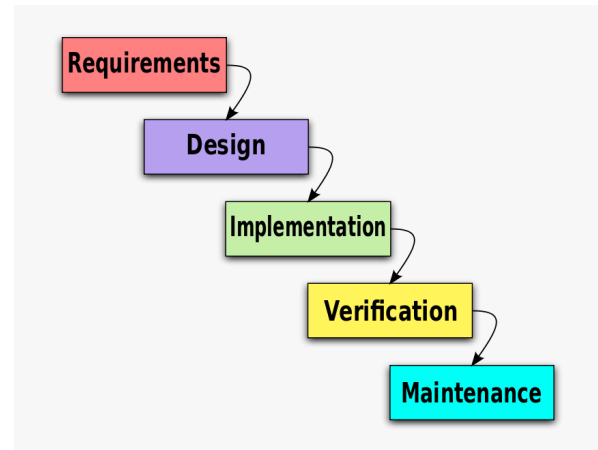


Figure 1. Waterfall system development

The waterfall model is a breakdown of project activities into linear sequential phases. Each phase depends on the deliverables of the previous one and corresponds to a specialization of tasks. The approach is typical for certain areas of engineering design. For example, software development tends to be among the less iterative and flexible methods, as progress flows in primarily one direction (“downwards” like a waterfall) through the phases of conception, initiation, analysis, design, construction, testing, deployment, and maintenance.

The waterfall development model originated in the manufacturing and construction industries, where the highly structured physical environments meant that design changes became prohibitively expensive much sooner in the development process. When first adopted software development, there were no recognized alternatives for knowledge-based creative work.

1. OOAD

Object-Oriented Analysis and Design are used to explain the system analysis and design used

in this research. The stages used in this study are Use Case, Use Case Diagram, Class Diagram, and User Interface.

2. Web Services

Web services are used in this research to integrate or collaborate data between the parties that collaborate.

3. JSON

JSON is used as a method of integrating data from one..

III. RESULTS AND DISCUSSION

The system design can be seen in Figure 2, as follow:

The use case in Figure 2 describes the actor who accesses the official tourism office website, where the data displayed in the website is information belonging to his own tourism office, as well as the information presented from the hotel, travel & tour agent, and tourism destination resulting from the integration and collaboration of information.

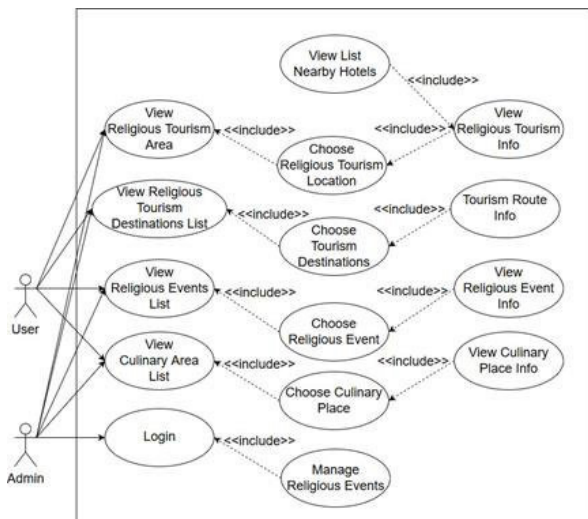


Figure 2. Use case diagram of travel agent

The use case in Figure 4 describes the actor who accesses the Travel & Tourism Agent website, where the data displayed in the website is information owned by Travel & Tourism Agent itself, as well as displaying information from the Office Tourism, Hotels and Tourism Destination in accordance with the results information Integration and collaboration..

The use case in Figure 3 describes the actor who accesses the Hotel website, where the data displayed on the website is owned by Hotel's own information, as well as displaying information from Office Tourism, Travel & Tourism Agent, and Tourism Destination in accordance with the results of integration and collaboration.

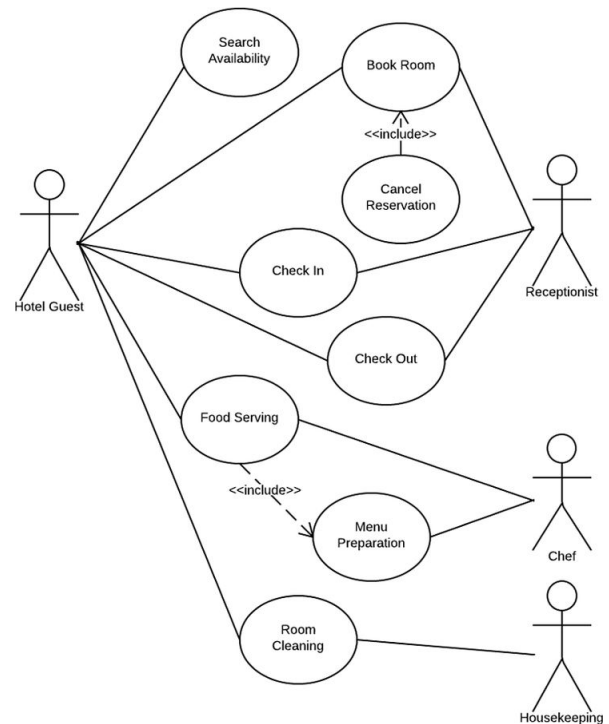


Figure 3. Use case diagram of hotel

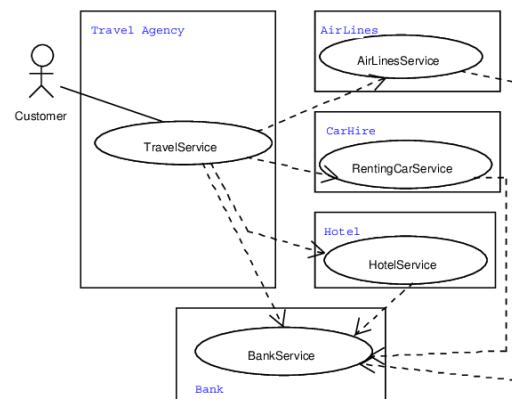


Fig. 4. Use case diagram of tourism destination

The use case in Figure 4 describes the actor who accesses the Tourism Destination website, where Tourism Destination itself owns the data displayed on the website, as well as displaying information from Office Tourism, Travel & Tourism Agent, and Hotels by the information of the integration result and collaboration.

IV. CONCLUSION

Integrated websites at the provincial level will make it easier for visitors to access information by choosing between office tourism, Hotels, Travel & Tourism agents, and Tourism destinations. Information from each party collaborating on rich information channels is very important to the visitors. It will help in terms of the marketing and promotion of each party [8]. The effective and efficient databases of the web need to be integrated based on their standard functions despite their supporting respective specific functions. Integrated data will always be synchronized every time visitors access the website to provide accurate and up-to-date information.

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ENHANCING LIFELONG LEARNING THROUGH MULTIMEDIA AND NEW TECHNOLOGY

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Abstract

Applying new technologies in learning has made constant professional development even more critical for teachers. As a result, they must be able to keep up with technological developments in the school. Their professional development includes constantly updating their skills and knowledge of how they can meet the needs of their students or solve problems that result from the use of computer technology in the learning. Online learning apps open up new opportunities for professional development by staying up to date with the skills and topics required for professional work. This paper aims to contribute to assessing the impact of online learning applications on teacher professional development by presenting specific case studies and proposing new technological tools to collect useful income-supporting quantitative metrics.

Keywords: education, technology, evaluation, lifelong learning

I. INTRODUCTION

Coronavirus disease that is called COVID-19 is new coronavirus infectious disease in the end of the year 2019. Because of the COVID-19 pandemic, educational institutions worldwide close their learning processes to avoid virus spread. More learners, approximately 90% student population in the world from kindergarten to university, have discontinued their learning. All of the students have a similar problem in conducting their education. All the governments in the world have closed the learning process to protect children from the COVID-19 pandemic. [1]

II. LIFELONG LEARNING

To succeed in the jobs of the future, the workers of tomorrow will need to become lifelong learners. The brain you graduate from college with at age 22 isn't the one you're stuck with for the rest of your life. And lifelong learning is the education that never ends: An ever-evolving mastery and proof of abilities. The excellent news about lifelong learning for employers is that it means more workers will tailor their skills directly to

their job functions. Employers who build cultures to support these future opportunities will attract the best talent [2].

That's why employers and prospective employees need to get more comfortable with alternative credentialing like specialized certifications, micro degrees, and digital badges. Employers will also need to facilitate these new models. For many companies, the safest way to venture into this new world of lifelong learning and micro-credentialing has been to modernize their own internal training programs and invest in learning opportunities that expand the skills of existing employees.. [3]

Lifelong learning is not necessarily the emergence of a new "system". It is rather an approach, which focuses on the individual's learning opportunities and process, while recognising that these opportunities and processes are catered for by many institutions in society, including not only the formal education and training systems, but also the family, the firm and the communication media The European Year of Lifelong Learning is a contribution by the European Union to mobilising all the forces which can contribute to providing the citizens of Union with the educa-

tion and training that will help them to find their place in the new world that is unfolding and to forge their individual destinies over the whole course of their lives. In doing this, it will take into account the recent developments in knowledge and in access to knowledge which have been accelerated by the emergence of the Information Society. [4]

III. EDUCATIOANAL MEDIA

The Educational material became more challenging, and its scope became broader, revealing the ineffectiveness of the traditional educational system. Thus, the need for innovative technologies emerged. Today's ubiquity of information and computer technology has become an essential stimulus for the development and improvement of lifelong learning in the quality of education. In its turn, this ubiquity has led to changes in the IT infrastructure of the education system.

Game is a technology that can be used to support learning in various fields [5]. The emergence of the Social Web allows users to enhance their actions when accessing the internet to search for information and interact, collaborate, and share learning content. The emergence of the Social Web has changed the relationship with information and has opportunities for personal and professional development beyond formal education. The purpose of the presented work is to assess the impact of Social Web applications for teacher professional development by submitting specific case studies and proposing COMPUTER TECHNOLOGY tools to collect useful quantitative indicators that support this impact assessment.

IV. EDUCATIONAL DEVELOPMENT

Teachers' professional development activities include individual development, continuing education, in-service education or staff development, curriculum writing, peer collaboration, study groups, peer coaching or mentoring, conference attendance, action research, article publication, etc. Professional development programs are important to reward and encourage educator development. [6]

One of the current trends in professional development activities for teachers is conducting online learning [7]. Teachers join online learning groups inside and outside of school to explore

new and better ways of teaching and to share lesson schedules, digital resources, and experiences with web-based activities. Social networking tools (Social Web) are the current trend to support this process. Networks build and maintain informal relationships with people you know or have friendships with can bring benefits such as employment or business opportunities. In professional networks, people are willing to learn about other professionals and their career experiences.

The fundamental characteristics of distance education and network education, it was understood that the fundamentals and the main characteristic of these two modalities are different; that the purpose of network education is much broader than the purpose of distance education; that the vision of network learning is different between them; and that both use knowledge media for their purposes. Thus, it was inferred that distance education and network education are not reducible to each other. [8] They also have strong applications in education in that they serve as potential vehicles to provide richer and further enhanced learning experiences for students by supporting blended learning.[9]

Not only does what we do matters, but we can prove that it does, because above all else we have become increasingly effective advocates for what we do. Bergquist (1994) suggested that educational developers tend to "cool the mark," meaning that we gravitate towards collaboration and consensus versus confrontation, making us perhaps less effective in situations calling for stronger measures. Our persistence and growth as a field somewhat belies the latter part of this assertion, suggesting instead that the idea of educational development might just prove to be a means to reach out and grasp the distinctive organizational legacy of higher education, including our ability to harness a culture replete with intractable ambiguity, complex diversity, and daring intellectual feats. [4]

In psychology there are several schools of thought about how learning takes place, and various categorisations of these. Rationalism (or idealism) is one such school, or pole, of learning theory still with some vogue. It is based on the idea of a biological plan being in existence that unfolds in very determined directions. Chomsky was a foremost member of this pole. Associationism, a second pole, centres on the idea of forming associations between stimuli and responses.

Pavlov and Skinner belong to this pole. Further details may be found in Richardson (1985). In the twenty-first century cognitive and social theories are those used most widely, with constructivism being the best known. Many ideas about learning in the early twentieth century tended to consider the development of the individual in isolation, but by the 1920s and 1930s ideas looking at the influence of the wider context in which learning occurs and at emotional and social influences and affects became more common. [10]

V. FUTURE EDUCATIONAL TECHNOLOGY

Technology is already sweeping through classrooms as educators and developers create more and more products designed to enhance education. With an influx of new learning models available, traditional educational methods are bound to evolve in the next decade. To get a better sense of where things are heading, Business Insider has taken a closer look at technology's developing role in the field of education.

A. Latest Educational Technology

An innovative educator, following the trends in education is probably not something new but rather essential. Even with this list, however, it is still up to you to choose the most suitable "trendy" aid for your teaching and training. Here we select the 10 latest educational technology trends that are must-know when diving into this industry.

1. eLearning

Distance learning became the top 2020 educational technology trend overnight because of the rapid spread of COVID-19 and school closures. This led to a rising demand for online educational platforms. eLearning is education or training delivered electronically. It can be slide-based online activities, or it can also be an online course that helps a business train employees in necessary skills.

With eLearning, educational content is delivered to learners through computers, laptops, tablets, or smartphones. Not only saving time but opening many doors for interactive learning. Rather than being in a passive experience, learners can choose what they need to learn quickly and easily, wherever they are. They also learn

through interacting directly with on-screen information through, for instance, dragging content from one place to the next. Moreover, the decision-making scenarios in eLearning also encourage learners to make their own choices on what they will learn next.

In eLearning, learners just soak in knowledge through reading or viewing content, it changes the way education is delivered. Also, many eLearning courses include animation, podcasts, and videos that create a multimodal and practical learning experience.

The last point is, although eLearning has been around for a long time, it is staying green and continuously developing. Educators are using the advantages of technology to make learning more effective. That's why more and more online and blended learning courses are produced nowadays.

Variety is the outstanding feature of online learning platforms. You can teach your students in real time (synchronous) via live stream or group meetings using Zoom or Microsoft Teams, or you can use recorded (asynchronous) methodologies with a wide range of media and digital functions available to enrich lessons. A good online learning platform can also be combined with a Learning Management System (LMS) so you can keep track of your students' learning outcomes.

2. Video-Assisted Learning

In recent years, video-assisted learning has become more and more popular as classroom displays. The "video day" is no longer a television on a trolley being wheeled into a class. With the internet and digital devices, every day can be a "video day."

This trend is also booming in distance learning conditions, which students learn through computer screens. Videos, especially animated videos, are extremely beneficial to enrich lessons and make content comprehensible. It improves students' outcomes and reduces teachers' workload.

3. Blockchain Technology

The Distributed Ledger Technology (DLT) from blockchain brings so many benefits to education, especially data storage. Every time new data is added, it adds another "block" to the sys-

tem, so the storage is technically limitless. Simultaneously, the data will be encrypted and distributed across multiple computers in the system. It makes transacting data decentralized and transparent.

Blockchain technology is used in Massive Open Online Courses (MOOCs) and ePortfolios to verify skills and knowledge. The DLT systems will answer the problems of authentication, scale, and cost for eLearning agencies. Moreover, it can help student applicants publish their accomplishments during the job-seeking phase.

4. Big Data Will Get Bigger

To cater to learners' needs, the learning experience needs to be personalized. And with COVID-19 and online learning booming, we now have bigger data than ever before. Instructional Designers have relevant information about learners' experiences to customize and present the course in a suitable format. Some information you should look for is the course's topic, learner enrollment, learner performance (time per course, completion, test result), and learner feedback (rating, survey).

5. Artificial Intelligence (AI)

AI now is the "in thing" in the US EdTech market. People have predicted that through 2021, AI could become the primary trend and grow by more than 45%. So why is the trend booming in one of the world's largest markets for EdTech? First and foremost, AI can automate basic activities in education, like grading. It's now possible for teachers to automate grading of the multiple-choice and fill-in-the-blank questions. Thus, automated grading of students' writing may not be far behind.

Furthermore, both learners and educators could benefit from AI. For example, students could get help from AI tutors when teachers are too busy to take care of everyone. Also, AI-driven programs can give both learners and educators helpful feedback. That's why some schools use AI systems to monitor student progress and to alert teachers when there might be an issue with students' performances. Therefore, it's not too far fetched that AI is a powerful assistant for in-class teaching. Meanwhile, why don't you help your learners get more out of the educational experience via AI?

6. Learning Analytics

The current landscape of learning analytics has dramatically expanded, especially for higher education. Learning analytics allows educators to measure and report student learning just by the web. From that, it's possible for them to better understand and optimize learning.

When teachers read insights from students' learning processes, they can improve the knowledge and skill acquisition of their students accordingly. For instance, teachers are able to see what type of information (text, images, infographics, or videos) that students enjoy most and use it more in their following lessons. Also, teachers are able to notice what pieces of knowledge weren't effectively delivered and enhance them next time. Moreover, learning analytics helps educators identify blocks of students who may have academic or behavioral challenges. From that, teachers could develop a way to help students reach their full potential.

7. Gamification

If you are looking for a way to turn learning into a more fun and engaging process, gamification is the most suitable educational technology trend. There is no reason for students not to be actively involved in classroom games. Students can learn and practice while they are joining in on exciting game activities. Gaming elements help create a funny and positive learning environment for learners.

The adoption of gamification is most popular in the K-12 education sector. It's because kids are quickly engaged in gaming videos or getting higher scores in a game. However, it doesn't mean that higher education or corporate training doesn't need fun elements to improve the engagement level of learners.

8. Immersive Learning With VR And AR

The class learning experience has undergone a tremendous change since Virtual Reality (VR) and Augmented Reality (AR) came to education. The rise in demand for experiential learning pushes forward the development of learning with VR and AR.

Learning has become much more interactive than traditional methods. While VR provides a constructed reality, AR gives an enhanced view

of a real image. Thus, they help explain complex concepts that plain images or even a lab's hands-on experiments couldn't show students. For example, VR is pretty helpful when you are attending a medical training course. In detail, VR creates a chance for students to experience real-world surgeries in a low-risk environment.

9. STEAM

STEAM-based programs are the new EdTech improvement over the STEM programs. This new trend of EdTech applies meaningful Science, Technology, Engineering, Art (the new element), and Math content to solve real-world problems through hands-on learning activities.

Concerning the advantages of STEAM, the first thing is that it helps students become increasingly curious about the world around them. Moreover, it also creates a safe environment for the learners to express and experience their ideas while thinking outside the box. The comfort of hands-on learning also helps students collaborate better with others.

10. Social Media In Learning

Have you ever thought that social media would be a part of the learning process? When every student, both young and mature, spends so much time on social media, why don't we turn it into a powerful tool to enhance learning?

It's how the idea to use social media for teaching came about. Many educational institutes have started using social media as a communication tool in which students can interact with others easily. Students can share study materials, discuss with others in a group, or easily comment on someone else's post. This organization creates lessons worth sharing and posts them on YouTube where people can easily access, find, and share the educational videos with their friends.

VI. CONCLUSION

In the end, we know that there is a lot to digest when we talk about educational technology trends. However, keep in mind that technology has seeped into education and renewed its whole teaching and learning process. Especially eLearning, an educational tool that not only increases the accessibility and convenience of education but also changes the learning behaviors and

learners' desires for learning.

But here is good news, you don't need to go alone on this EdTech ship because you have us who will join you in bringing forth the true value of learning, inspiring learners, and making education more relevant and empowering.

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DESIGNING BATIK FRACTAL USING ADOBE PHOTOSHOP

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Abstract

Tourism is an important economic sector of Indonesia, for it is one of the significant devisa sources for Indonesia. To increase the role of sustainable tourism in economic growth, promoting tourism is essential to attract tourists continuously and effectively. Nowadays, promotion uses many methods and media, including mobile devices, for the fast-growing smartphone users globally. Therefore, mobile multimedia is considered an effective medium to convey promotion messages for tourism, as the essential to promote Indonesia tourism. According to Luther, this research consists of six phases of the Multimedia Development Life Cycle, such as concept, design, obtaining content material, assembly, testing, and distribution. During the assembly phase, the mobile multimedia is built using Adobe Photoshop. The application is expected to increase batik design innovation who visit Indonesia.

Keywords: tourism, art, batik, fractal

I. INTRODUCTION

The batik art is most developed in Java island, Indonesia. All the materials for processing are cotton and beeswax made of some vegetable dyes. After a cloth has been washed, soaked, and beaten with a large mallet, the patterns are drawn with pencil and later redrawn using hot wax, usually made from a mixture of paraffin or beeswax, sometimes mixed with plant resins, which functions as a dye-resist. The wax can be applied with various tools, using a pen-like instrument called a canting, made from a small copper reservoir with a spout on a wooden handle. [1] The most traditional type of batik, called batik tulis (written batik), is drawn using only the canting. The cloth must be drawn on both sides and dipped in a dye bath three to four times. The whole process may take up to a year; it yields considerably more acceptable patterns than stamped batik. [2]

It uses a stiff brush or a copper block stamp for larger patterns to cover large areas more efficiently. After the cloth is dry, the resist is removed by boiling or scraping the cloth. The areas treated with resist keep their original color; the contrast

between the dyed and the undyed regions forms the pattern when the resist is removed. [3] This process is repeated as many times as the number of colors desired.

Batik and fractal are two different concepts. Batik is in the region of art, while fractal is a mathematical concept [4]. Fractals are infinitely complex patterns that are never-ending and self-similar across different scales. It is called "self-similarity." They are created by repeating a simple process repeatedly in an ongoing feedback loop. Driven by recursion, fractals are images of dynamic systems. Fractal patterns are extremely familiar since nature is full of fractals. For instance: trees, rivers, coastlines, mountains, clouds, seashells, hurricanes, etc. Although fractals are very complex, they are made by repeating a simple process [5]. Batik and fractal join a new kind of batik concept: Batik Fractal. In Batik Fractal, the fractal is used to design and redesign new patterns using Batik software. [4]

A. Batik

Batik is an ancient art form of Indonesia made with wax-resistant dye on fabrics. Indonesian

coastal batik made in the island of Java has a history of acculturation, a mixture of native and foreign cultures. It is a newer model compared to inland batik, and it uses more colors, though the patterns are a lot less intricate. It is because inland batik used to be made by select experts living in palace areas, while anyone can make coastal batik. [6]

Batik is very important to Indonesians, and many people wear it formal or casual events. Indonesians commonly use batik in various rituals, ceremonies, traditions, celebrations, and even daily uses [7]. On October 2, 2009, UNESCO officially recognized the written batik and stamped batik as a Masterpiece of Indonesia's Oral and Intangible Heritage of Humanity. Since then, Indonesia has celebrated "the National Batik Day" (Indonesian: Hari Batik Nasional) annually on October 2. Nowadays, Indonesians wear batik in honor of this ancient tradition. [7]

B. Fractal

In the past, mathematics has been concerned largely with sets and functions to which the methods of classical calculus can be applied. Sets or functions that are not sufficiently smooth or regular have tended to be ignored as 'pathological' and not worthy of study. Certainly, they were regarded as individual curiosities and only rarely were thought of as a class to which a general theory might be applicable. In recent years this attitude has changed. It has been realized that a great deal can be said, and is worth saying, about the mathematics of non-smooth objects. Moreover, irregular sets provide a much better representation of many natural phenomena than do the figures of classical geometry. [8].

II. METHOD

In Creating batik fractal can be done using the research design includes eight processes, that are: (1) Create Adobe Photoshop document; (2) Setup dimension, resolution, and mode; (3) Create vector drawing using Adobe Illustrator; (4) Use the vector drawing in Adobe Photoshop document; (5) Duplicate the image and transform it; (6) Make sure the position of duplicated image to be a fractal; (7) Merge the fractal layer; and (8) Duplicate the image and then fill all the space, as presented in Figure 1.

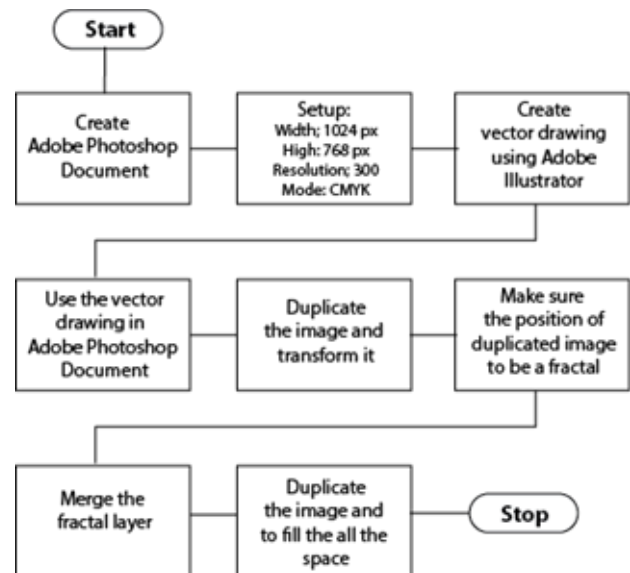


Figure 1. Research design

III. DISCUSSION

Adobe Photoshop graphic design tool [9] was used to create batik fractal, was done as follow:

1. Once Adobe Photoshop was open, create a new document and then decided the high resolution setting, Width: 1024 pixels, Height: 768 pixels, Resolution: 300 ppi, and chose CMYK mode, so that it could be printed if needed.
2. Created vector drawing using Adobe Illustrator and placed at Adobe Photoshop stage, and then filled the shape with color, as can be seen in Figure 2.
3. The image was duplicated, and selected it then press CTRL+ to start to be transformed. Using the options bar the image was reduced both the width and height values to 90%, changed the rotation angle to 20%. The new image was reposition at the new layer as needed, so that there was pivoting pattern from the center, as can be seen in Figure 3.
4. The process was repeated over and over until the appearance of fractal design style. The angle was always 20 degree with reduced size 90%, as can be seen in Figure 4.
5. The next step was to merge all the layers that were created into one fractal layer, just used the same technique before. Then, duplicated it, resized it a bit, and used the duplicates to fill all the other empty spaces creatively, as can be seen in Figure 5.

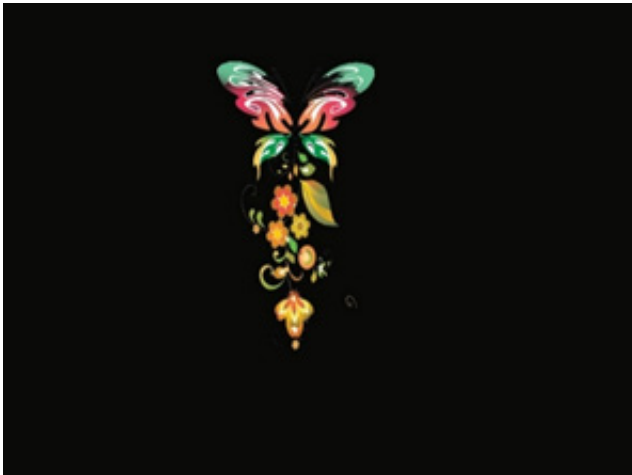


Figure 2. Imported vector drawing from Adobe Illustrator at Adobe Photoshop

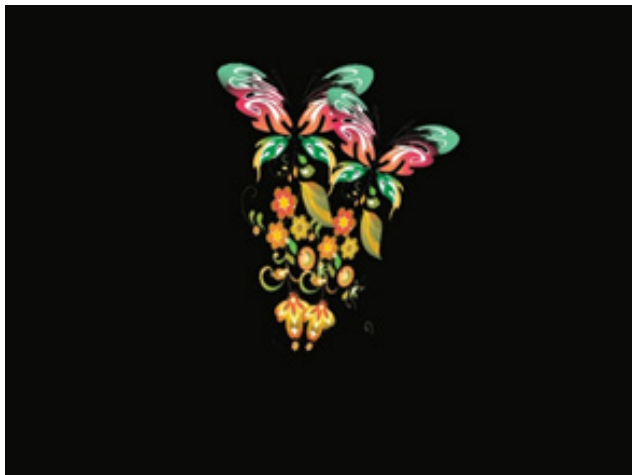


Figure 3. Duplicated image

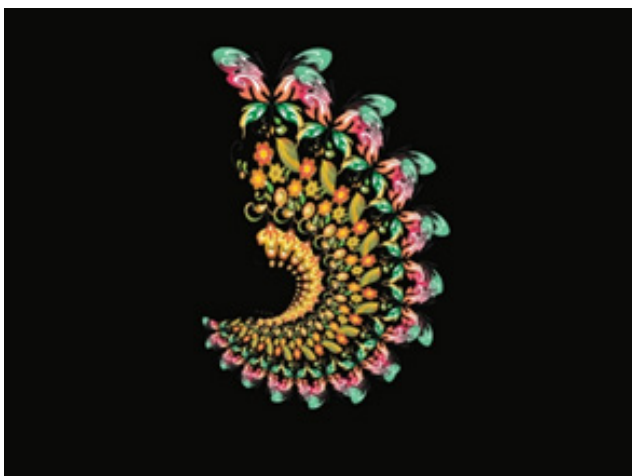


Figure 4. Fractal design style



Figure 5 Batik fractal

IV. LIMITATIONOF RESEARCH

This research described creating batik fractals using Adobe Photoshop. The fractal image was created manually in Adobe Photoshop through image transformation and carefully placed. The fundamental fractal is generated using programming language, which is done perfectly, but Adobe Photoshop can develop an attractive artistic design that meets the user's needs.

V. CONCLUSION

The analysis is written in section III, and it has achieved the conclusion: 1. Fractal was a method that could rapidly create different kinds of batik motives. 2. Batik patterns using fractals generated with Adobe Photoshop; therefore, it is possible to create various batik patterns using different rules. 3. The measurement of distant noise error was conducted on every fractal line of the formed fractal batik patterns. It is because generating noise was performed randomly on every fractal redrawing system process.

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LITERATURE REVIEW ON IMPACT OF THE COVID-19 PANDEMIC TO STUDENT LEARNING IN ELEMENTARY AND HIGH SCHOOL

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Abstract

The COVID-19 pandemic of 2020 has brought much challenge and disruption to the lives of students in elementary through high schools, their families, and their communities. The majority of participants were students, with other participants being teachers, parents, and various community members. Participants were interviewed on reactions to the pandemic experience, positive and negative life experiences both before the pandemic and during the pandemic that influenced coping, and reflections on what their local schools were doing to facilitate educational function. Interview responses aligned with research already published on student experience with the pandemic and also produced new insight for future endeavors by the educational community in promotion of development of protective factors before similar crises occur and optimal interventions by schools during the experience of crises.

Keywords: COVID-19, student, learning, school

I. INTRODUCTION

The COVID-19 pandemic has brought life disruption across the globe to people of all ages. Considering that many countries are starting to lift restrictions on activities slowly, the longer-term effects of keeping schools open on community transmission are yet to be evaluated. Some modeling studies suggest that school re-opening might have a negligible impact on more comprehensive communication in the community, but this is not well understood. Further studies are underway on the role of children in transmission in and outside of educational settings. WHO is collaborating with scientists worldwide to develop protocols that countries can use to study COVID-19 transmission in educational institutions.. [1]

More than 144 million students in Latin America and the Caribbean have missed nearly five months of school due to public health measures taken by governments in response to the COVID-19 pandemic. The health crisis has meant

a triple shock for children and adolescents, with the prolonged closure of schools, confinement due to lockdown measures, and economic security loss in households. This triple shock has both short- and long-term repercussions that put the development of an entire generation at risk. Although governments throughout the region have implemented distance learning strategies intended to maintain a degree of continuity in children's and adolescents' learning and well-being, these solutions have been unevenly implemented and may even further exacerbate the education gaps that existed in the region before the pandemic. [2]

Whether a child should go to school depends on their health condition, the current transmission of COVID-19 within their community, and the protective measures the school and community have in place to reduce the risk of COVID-19 transmission. While recent evidence suggests that the risk of severe disease for children is lower overall than for adults, special precautions can be taken to minimize the risk of infection among children.[3]

Saputri & Pradana [4] The impact of Covid-19 in the learning process dramatically affects the education policy that is currently being established. Schools were closed, and online learning was introduced with the help of online learning applications. Students' effects, especially those who carry out learning activities online, significantly impact their mental and feelings. Most of them feel the negative impact related to Covid-19. In addition, both students and teachers were forced to adapt to the new policy. But for those who can take values and lessons from the pandemic, there will be positive impacts that will be received. The current condition of the pandemic can be a reference for the spirit of every education party so that it can continue to be able to maximize the course of learning and make the best contribution in advancing the world of education with limitations.

Students' experience was impacted the educational experience of school and students along with the impact on the way schools do business. Learning before the pandemic, learning, and school during the pandemic, and learning in the future once the pandemic is past are integrated as the person, and environmental systems frame ultimate development.

A. Literature Review

As COVID-19 is still a global pandemic experience with an unknown ending date, the published literature is still limited on the impact of the incident and lessons – this is still a work in progress. Guidance from such literature can inform teachers and individuals to prevent a negative impact and implement and sustainment of coping and growing during a disaster or pandemic. It can also be gained on planning future interventions to help students and schools survive and thrive through pandemics or similar disasters.[5]

B. Education on COVID-19 Pandemic

COVID-19 has impacted immensely to the education sector of India. Though it has created many challenges, various opportunities are also evolved. The Indian Govt. and different stakeholders of education have explored the possibility of Open and Distance learning (ODL) by adopting other digital technologies to cope with the present crisis of COVID-19. India is not fully equipped to make education reach all corners via digital platforms. The students who aren't privi-

leged like the others will suffer due to the present choice of digital media. But universities and the government of India are relentlessly trying to come up with a solution to resolve this problem. The priority should be to utilize digital technology to create an advantageous position for millions of young students in India. It is need of the hour for the educational institutions to strengthen their knowledge and Information Technology infrastructure to be ready for facing COVID-19 like situations [6].

Since its outbreak two years ago, the COVID-19 pandemic has disrupted education systems globally, affecting the most vulnerable learners the hardest. It has increased inequalities and exacerbated a pre-existing education crisis. School closures have ranged from no closures in a handful of countries to up to more than an entire school year. Lack of connectivity and devices excluded at least one-third of students from pursuing learning remotely.

Despite the Omicron variant, schools are open in most countries, supported by health and safety protocols and vaccination programs. But the costs stand to be tremendous in terms of learning losses, health and well-being, and drop-out. Prioritizing education as a public good is crucial to avoid a generational catastrophe and drive a sustainable recovery. education systems must transform, leveraging technology to benefit all learners and building on the innovations and partnerships catalyzed throughout this crisis.[7]

UNESCO is supporting countries to mitigate the impact of school closures, address learning losses, support teachers and adapt education systems, particularly for vulnerable and disadvantaged communities. To mobilize and support learning continuity, UNESCO has established the Global Education Coalition [8] which counts 175 members working around three central themes: Gender, connectivity, and teachers.

This second Global Education Evidence Advisory Panel (GEEAP) report draws on insights from the latest research to document the impacts of and responses to Covid-19. It offers guidance on how education systems in LICs and MICs can respond to the damage caused by the pandemic and ensure that the learning needs, especially of marginalized and disadvantaged groups, are addressed. In addition, the report provides practical, focused advice for policymakers, represent-

ing the consensus recommendations of an independent, interdisciplinary panel of global experts based on the best evidence available during a rapidly changing crisis.. [9]

II. METHOD

A qualitative study [10] integrated into a student course. Participants answered questions on reactions to the experience of COVID-19 negative and positive learning factors before COVID-19. It may have contributed to their learning during the pandemic experience, negative and positive learning factors during COVID-19 that may have contributed to their control of the pandemic experience, and sources of strength and support. Two questions were answered on what schools were doing to help the education process through the pandemic and what the participant would like to see schools do additionally to support the education process during this time further.

A. Participants

The study included two sets of participants. The first set was 44 students enrolled in an elementary school course. The second set of participants were the participants who were interviewed on their COVID-19 experience. This study was conducted during summer and fall of 2021. Participants consisted of family, friends, or colleagues known by student participants in their local communities. Table 1 show the age range, gender, and any other pertinent characteristics about participants.

Table 1. Participant characteristics

Study Factor	Frequency
Childdren: 6 to 12 years of age	11
Adolescence: 13 to 18 years of age	9
Male	24
Female	20
Elementary School Student	19
Teacher	5
High School Student	20

B. Procedure

Students first selected a participant they knew from whom they could safely interview within the parameters of COVID-19 pandemic precautions. Next, they obtained the person's agree-

ment for a confidential interview about the experience and then interviewed the person with a set of questions from the instructor as shared below. The second part of the research was to share a personal reflection on what they learned from the research that they could use in their future work as a supervisor. Here are rge interview questions:

1. What is the impact of COVID-19 on students and teachers?
2. What is the reaction to the experience after the time?
3. What is the current reaction to the experience at that time?
4. How is he new online learning impact student cognition?
5. What is is about the new online learning impact to the teacher to deliver teaching material?
6. Does the government support the devices for children?
5. Does the government support internet access for children?..
8. Can an students enhance their learning outcomes if the COVID-19 pandemic lasts a long time?

C. Data Analysis

Participant responses to interview questions and graduate course students' reflections were analyzed for themes related to the experience of school in the pandemic and the preferred school response to help create a better school experience while moving forward in and out of the pandemic. The categories of Student and Teacher grouped these. All persons in the category of Other represented a variety of professional backgrounds and were all adults. Yet, they still responded to the interview questions about school.

Student insight

Most students indicated a sense of joy at getting out of school for some early spring break, which soon turned into sadness and frustration at being physically separated from friends and even from their teachers. In addition, many students expressed frustration at using distance learning and indicated a preference for a face-to-face time in the classroom and increased appreciation for their teachers.

Several students suggested increased availability of tutoring services per the online learning challenges. Many students expressed a desire for schools to “move back to normal” as soon as they could, with a desire to get away from learning online.

Teacher insight

Teacher reflections on additional school action moving forward included attention to the organization for more virtual operation and school attention to more support of teachers in this new normal of process.

III. Conclusion

Students gained practical insight into what would be an essential focus for them as future education to assist in getting through any future crises. They also gained insight into possible best practices during a crisis. In contrast, the teacher should learn the new technology to continue teaching in the COVID-19 pandemic. Still, there is low bandwidth and hard internet access, especially in the village.

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DESIGNING VIRTUAL WORLD FOR HELPING STUDENTS

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Abstract

Students in Informatics are often required to work in a team environment to complete assignments. For example, in the Game Programming course, we expect students to complete a series of design projects that end with a complete game design. Classroom time is set aside each week for teams, but students need time to finish their work outside the classroom. To help them with this process and teach them effective team strategies that they can apply to their careers, we've created a supportive online environment. This paper will present the design created for this course and discuss the challenges and opportunities we experienced with building and deploying it.

Keywords: game, virtual world, student, project

I. INTRODUCTION

In the game programming course, students are in a team who work together to complete a series of interrelated projects. Unless there are mitigating circumstances, each student stays in one team for the entire semester. Because of the layout of the computer labs, the teams are small, ranging from 5-7 students. Typically, a team would consist of 5-7 students to achieve a sufficient knowledge base.[1] In this class or lab environment, 4 or more students teams would not support direct interactions between each member.

These small teams work together to design, develop, and manipulate a game system and design. Therefore, the student will have to work outside of the classroom together.

In the Computer Science Department, part of the mission is to prepare students to work effectively in a team environment. Because teachers aspire to provide students with opportunities to work with one another, many computer science courses build teamwork.

In the Game Programming [2] course, students are expected to work in a small team to complete a semester-long project. This project lends

itself to a student-driven collaborative environment because of the complex and ill-structured nature of designing and developing a game system. Most of the informatics students' current technical knowledge and skills are enhanced by collaboration [3]. This project is broken down into small tasks, taking 3 weeks to complete. Students tend to stay with one team throughout the semester because the project builds on each task and knowledge gained from any task funnels into the knowledge needed to complete the next job. To help the students work effectively in this project and prepare them to work in a contemporary project environment [4] where teams use technology to facilitate communication and the completion of tasks.

This paper will focus on these efforts and discuss their strategy for enhancing team effectiveness in virtual space, including developing a self and peer assessment tool used to determine the effectiveness of student teams.

1. Project Tecm

Each team completes a series of game design and development projects throughout the course. Each project fits into approximately six weeks.

First, students learn the theory behind a task, apply it, and then use their new knowledge to complete the group project. The team earns the grade that is assigned to the project.

During this 6-week cycle, students have about 90 minutes to 3 hours to work with one another. They are also able to determine individual responsibilities for the task completed quickly. To complete the work, though, students will need to spend time working with their teammates outside the class.

When teams started becoming popular in the 1980s, there seemed to be the expectation that good things would happen if many people got together to work on problems. It doesn't take many experiences like those described in the preceding case studies to shatter that illusion. Organizations are more sophisticated now: They realize that many factors contribute to success.[5]

2. Enhancing Team Effectiveness

To produce significant change, organizations must have a number of efforts underway at different levels of the organization at the same time. Perhaps the most prominent challenge organizations face now is aligning teams internally and with the organization's mission. It requires a management system that ensures the teams are aligned with strategic direction and line management that knows what the teams are up to and how their work contributes to the organization's business goals. Some elements of this system include:

- An overall improvement plan
- A link to the organization's strategy
- A review schedule
- A system for identifying, chartering, and monitoring team efforts
- Organizational recognition of desired behaviors and celebration of team success. [5].

3. Student Need

These adventures nurture mutual collaboration that allows learners to apply newly acquired learning in insightful, cognitive processing design without detachment from real-life situations. A judicious blend of traditional and virtual learning environments with particular attention to students' needs and satisfaction can create constructive, creative, and reflective practitioners or learners. Virtual Learning Environments are indeed the future of all educational establishments. The virtual classroom environment will

help manage this process but sometimes the easiest solution is taking attendance, identifying the reasons why team members are absent, and reviewing usage records from the online learning environment [6].

II. DEVELOPING THE VIRTUAL ENVIRONMENT

We provided students with custom-designed community space on network to support teams working in virtual spaces. This space is hidden from the world; others cannot view the students' documents, chats or activities (e.g., student-developed study guides). As an additional benefit, secluding the virtual workspace in this way allows students the ability to work without interruptions, advertisements, and virtual noise. To accomplish this goal, we enhanced the course management system to support the ideas on how to help effective teamwork in a virtual space.

We'll provide suggestions for those who may not have the same facilities later on. The following diagram depicts the virtual team environment we developed.



Figure 1 The virtual environment

The virtual environment system has two main goals. The first goal is to ensure that virtual environment-based instructions for training personnel in the manufacturing industry can be created quickly so that the use of the system can potentially realize an overall training cost reduction. The second goal is to accelerate the training process for the trainees through the use of adaptive, multi-modal three instructions. With this system, training supervisors can use a wide variety of multi-media options such as 3D animations, videos, text, audio, and interactive simulations to create training instructions. The virtual environ-

ment enables workers to practice instructions using interactive simulation and reduces the need to practice with physical components. The system is mainly geared toward cognitive skills: training workers to recognize parts, learn assembly sequences, and correctly orient the parts in space for assembly. The virtual environment was designed to be an affordable Personal Virtual Environment for training. We developed a low-cost wand design and used an off-the-shelf head-mounted display. The level of physics-based modeling that has been implemented as well as the hardware selected reflects this design decision.[7].

1. Self and Peer Assessment

: When used appropriately, self-and peer-assessment is a very practical learning tool. The present work has compared instructor formative assessment and feedback, the self-assessment, and peer assessment. The students followed a continuous formative evaluation during the first semester. Subsequently, they were divided into two subgroups based on similar performances. One subgroup performed self-assessments, and the other followed PA during the last part of the course. Results suggest that peer assessment is a more effective learning tool than self-assessment, and both are more effective than formative instructor assessment. However, a survey conducted at the end of the experiment showed higher student confidence in instructor assessment than in peer assessment. The students recognized the usefulness of acting as peer assessors but believed that self-assessment helped them more than peer assessment. [8]

2. Suggestion for External management systems

A team with representatives from essential management functions can identify and assess issues, opportunities, and existing processes. Where appropriate, including contractors, suppliers, or other external parties as part of the project team. The team will need to meet regularly, especially in the early stages of the project. A cross-functional team can help to ensure that procedures are practical and effective.

III. CONCLUSION

The objectives was to provide teams with modern tools to enhance their communication, organization, peer assessment, and quality of work.

Within the course we worked with, teams first chose a team name. Then, that name was used to create assigned space within the system and give that space to individual units. Teams could use their assigned space to chat, conduct threaded discussions, leave messages, email the team, develop wikis or blogs, assess team and peer performance, and collaborate on documents.

Because we were able to build this working space for teams within the course management system, we could keep out distractions such as virtual or cyber noise.

Students appreciated this because it allowed them to focus more efficiently. In addition, the virtual team model discussed in this article can be built outside a course management system.

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