E-Learning Methodologies for Visual Design Education

Assist. Prof. Dr. Huda Othman

Assistant Professor of Graphic Design and Multimedia. Faculty & Trainers Coach at Niagara College KSA

dr.hoda.osman@gmail.com

Abstract:

Digital technologies in E-Learning are reshaping the way visual design subjects are taught. Many visual design educators believe it is difficult to teach design online because of studio-based interactions. Is visual design one of those disciplines that cannot be taught online because of the studio culture? This paper explores that question by investigating E-Learning methodologies of teaching online visual design subjects. The main objectives of this paper: to provide a general theoretical framework of the different methodologies used in E-Learning for visual design, to highlight the main approaches and scenarios of E-Learning in visual design education, and to suggest an E-Learning structure for visual design subjects. The significance of this paper is to present different online teaching methodologies that improve the E-Learning of visual design subjects. To encourage educators to give consideration in using online teaching methodology for their course ideally. This paper follows the descriptive and theoretical methods to investigate the E-Learning methodologies used in teaching visual design. The problem of this paper can be formulated in these questions: Can a traditional design course be transformed into a fully online learning experience? What are the platforms of E-Learning? What are the approaches and scenarios of E-learning used in visual design education? What are the methodologies used in E-Learning for visual design subjects? Can we suggest an E-Learning structure suitable for visual design subjects? The main results of this paper: In the visual design online education students become self-reliant, unlimited exposure to peer progress is possible, and immediate feedback is possible. The design of an E-Learning for visual design subjects should involve using a combination of the methodologies which are Expository Methodologies, Application Methodologies, and Collaborative Methodologies, to maximize the students' benefits.

Keywords:

E-learning, Online Teaching Methodologies, E-Learning Platforms, Visual Design

Introduction

E-learning has become an increasingly important learning and teaching mode all-over the world in recent decades, especially in 2020 because of Corona virus disease crisis (Covid-19), it has been recognized as an efficient and effective learning method. E-Learning describes learning delivered fully online where technology mediates the learning process, teaching is delivered entirely via Internet, both students and instructors are not required to be available at the same time and place. E-Learning practices are evolving with the mutual influence of technological E-Learning platforms and pedagogical models. E-Learning and traditional distance education approaches share the emphasis on "any time, any place" learning and the assumption that students are at a distance from the instructor. The rapidly rising number of internet users with smartphones and tablets around the world has supported the spread of E-Learning, not only in

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higher education and vocational training but also in primary and secondary schools. Today, the broad penetration and consolidation of E-Learning needs to advance and open to support new possibilities. Future E-learning should encompass the use of internet technologies for both formal and informal learning by leveraging different services and applications. The digital technologies in E-Learning are reshaping the way higher education subjects are taught, including visual design. The areas of visual design "such as industrial design, interior design, communication and interaction design, graphic design, and fashion design" has been somewhat slow in adopting online E-Learning formats, perhaps because design learning is so tied to the tacit knowledge gained during the production process. There is now, however, a critical mass of data from which meaningful conclusions can be drawn as design vaults itself into the online realm. Most of visual design disciplines use studio teaching as a pedagogy to educate students for professions in art and design. Studio teaching bases a high premium on face-to-face interactions which guide learning through dialogue and feedback on individual work. Many visual design educators believe it is difficult or even impossible to teach design online because of studio-based interactions. Is visual design one of those disciplines that cannot be taught online because of the studio culture? This paper explores that question by presenting E-Learning methodologies of teaching visual design subjects that employ a virtual classroom to manage peer-to-peer critiques, instructor feedback, and assignments.

Objectives of the Paper

The objectives of the paper are:

- To provide a general theoretical framework of the different methodologies can be used in E-Learning for visual design education.
- To highlight the main approaches and scenarios of E-Learning in visual design education.
- To identify the differences among E-Learning platforms.
- To identify the E-Learning components for visual design subjects
- To suggest an E-Learning structure for visual design subjects

The Paper Significance

The significance of this paper is to present different online teaching methodologies that can improve the online learning environment for the students of visual design. This paper will also encourage educators and course developers to give more consideration in using specific online teaching methodology for their respective course ideally.

Statement of the Problem

The problem of this paper can be formulated in the following questions:

- Can a traditional design course be transformed into a fully online learning experience?
- What are the platforms of E-Learning?
- What are the approaches and scenarios of E-learning used in visual design education?
- What are the methodologies used in E-Learning for visual design subjects?
- Can we suggest an E-Learning structure suitable for visual design subjects?

The Hypotheses of the Paper

This paper supposes that:

- A traditional visual design course can be transformed into a fully online learning experience.
- The best practice to make distinct and effective E-Learning course for visual design subjects, should involve using a combination of online teaching methodologies including: Expository Methodologies, Application Methodologies, and Collaborative Methodologies.

The Methodology of the Paper

The Methodology of this paper, it follows the descriptive and theoretical methods to investigate the E-Learning methodologies that can be used in teaching visual design via online environment.

Theoretical Framework

Traditional Education of Visual Design

The student-centered, socially interactive characteristics of teaching and learning of visual design has always rendered it distinct from more conventional academic disciplines, such as history, philosophy, or business, for example (Loy & Canning, 2013). These disciplines can be faced with large class sizes of over 150 students, where knowledge transmission occurs in lecture format and individual student engagement is challenging to accommodate. Students often receive feedback only after learning has been completed (through summative assessment like an exam), while visual design students' learning is guided by individual and ongoing feedback and is informed by a cycle of action and reflection. It is these socially interactive characteristics of teaching and learning design that colors many design educators' opinions that it is difficult or even impossible to teach design online. (Bender, 2005; Fleischmann, 2016; Park, 2011; Wood, 2018). Comparatively few fully online visual designs courses exist while other academic disciplines are experiencing rapid growth in offering fully online subjects (Kumar, Kumar, Palvia, & Verma, 2019). Studio teaching occupies the pedagogical heart of higher education visual design disciplines that prepare students for professions in such diverse fields as industrial design, graphic design, digital media design, architectural design, interior design, and fashion design. The characteristics of studio-based teaching in art, architecture and visual design, have been identified as supporting interaction, active learning, as well as social engagement (Crowther, 2013; STP, 2009). The traditional design studio "Figure 01" is a physical space which nurtures this project-based learning through open discussions and hands-on activities. Studio teaching places a high premium on face-to-face interactions which guide individual student learning through interactions and dialogue (Blair, 2006; Kuhn, 2001; Lee, 2006). Part of this dialogue revolves around the studio critique. The critique or "crit" is the central method of formative assessment in art and visual design education (Blythman, Orr, & Blair, 2007; Day, 2012; Fleischmann, 2016). At critiques, students present their work-in-progress to the design educator, peers, and at times, design professionals to receive feedback. The critique and learning in a studio environment support peer learning; instant feedback is dialogic and highly social, and it enables students to benchmark themselves against peers (Blythman, Orr, & Blair, 2007). Studio critiques function as a catalyst to improve students' creative output, thinking processes, and techniques when students present their work-in-progress to peers, instructors, and design professionals for comment (Ellmers, 2006; Lee, 2006). The focus of a studio critique is to trigger individual creative development through a circle of

action and reflection (Ellmers, 2006). The crit attains a key goal of design education, which is to foster the ability in each student to reflect on the quality of their creative output and that of others. This reflective practice has always been central to the education of design students (Fleischmann, 2016). The way visual design is taught and learned illuminates the challenges design educators face when attempting to create blended or online learning experiences for students. Design is a project-based discipline with studio-based teaching as its core pedagogy (Park, 2011; Saghafi, Franz, & Crowther, 2010). Projects which are either real or fictional present students with open-ended problems to which no single answer exists (Blair, 2006; Crowther, 2013). Possible solutions are discussed with peers and design educators and these discussions guide the learning process (Kwan, 2010; Park, 2011).

Figure 01: Examples of the Traditional Design Studio
https://www.ualberta.ca/art-design/areas-of-study/visual-communication-design.html - (Accessed 30.07.2020)

E-Learning in Visual Design

Art and design often lag behind the schools of business, engineering, and science in curricular integration of technology, even though technology has impacted the way art is taught, studied, and practiced. Technology impacts every stage of the visual design process, from ideation to implementation. In turn, technology impacts traditional design education and the newest form, online education. (Lawn, 1998). As offerings of online visual design courses continue to increase, especially these days of 2020 during Corona virus disease crisis (Covid-19), the most commonly stated barrier for faculty to integrate technology into their curriculum is a lack of time. For design educators in particular, "preparing for a virtual design studio experience requires more preparation on the part of participating both faculty and students". Acknowledged as more labor intensive than traditional face-to-face courses, virtual studio course preparation is more than an "add-on" to the already busy schedules. Other barriers include a dislike of computers, a lack of available technology resources, and the insensitivity of administration to instructional needs. In addition, online education is not yet seen as advantageous to design educators. (Blossom, Matthews, & Gibson, 2002, p. 29). On a positive note, the use of new technologies can be motivating. Fifty-one percent of educators in the 2000 National Education Association survey who had never taught a Web-based course were favorable toward distance education and 72% of those who had taught a Web-based course were also favorable. The enthusiasm to offer this educational opportunity to students outweighs other concerns. (http://www.nea.org). Parker (2003) analyzed over 100 articles and concluded faculty become involved in distance teaching for the same reasons and rewards that they teach traditional courses. Some of these rewards are extrinsic (such as compensation and recognized leadership) while some are intrinsic (such as gained knowledge and accommodating a diverse group of students). Can a traditional design course be transformed into a fully online learning

experience? This paper investigates that central question and provides some practical answers. This paper explores the E-Learning approaches and scenarios in the visual design education. This paper also suggests an E-Learning structure suitable for visual design subjects. Furthermore, it explores the effectiveness of teaching design online via appropriate set of methodologies.

The Literature Review of Online Visual Design Education:

As technology advances, so do options for design educators to introduce online elements to their subjects, particularly internet-based collaboration and classroom critiques; Student participation and a willingness to take responsibility for self-directed learning are key to making this online approach work. Visual design studio classes are commonly taught in smaller groups of up to 20 students (Crowther, 2013; STP, 2009), so most of the larger sample sizes involve blended learning subjects, where digital technology is specifically used to cope with larger-sized, often geographically dispersed, design classes. Blended learning seems to be a middle ground to introduce online elements to design classes with various educators trialing social media platforms like Facebook as a collaborative and communication tool. (Fleischmann, 2016). But these trials do not offer students a completely online experience. Online courses combine all the teaching materials, discussions, display of design process and production into a virtual environment where instructor and peers' critique creative work and project submissions are done via the Internet. Early research recognized the power of the internet for collaborative projects in visual design education (Cheng, 2000). The limitations of distance, time, and physical location are not present on the web. But it is not easy to create an online learning experience (or virtual design studio) where the social interaction of face-to-face, problem-based learning is done over the internet and where students must assume basic organizational skills (Kvan, 2001). Researchers also suggest that the key to the successful implementation of online collaboration in visual design depends on high student participation rates and quick instructor feedback (Bender & Vredevoogd, 2006). Investigators (Power and Kannara 2016) found that ease of navigation and well-designed modules are critical to the success of student-centric virtual studios. Investigators also found that training on internet tools positively impacts both student and teacher engagement in the course material; the smooth operation of technology platforms and tools can make or break a blended or online design class. (Barber 2011) examined conducting the studio critique online at a Canadian university's' graphics design foundation course as part of a blended learning experience. Barber's theory is that the critique could work in a blended learning mode with critique feedback undertaken in online discussions while hands-on practice is carried out in the classroom. When reviewing the literature, it becomes apparent that currently no 'one size fits all' online visual design education model exists. The highly student-centered approach of design learning and teaching is based on learning that is guided through ongoing feedback and the process of action and reflection does not easily translate into a fully online learning experience (Fleischmann, 2016). In comparison, conventional disciplines with a traditional way of knowledge transfer appear to have a head start in translating their teaching and learning approaches (e.g. lecture, exam) into an online environment. Nevertheless, examples of strictly online approaches to higher design education subjects point out the following advantages in terms of critiquing and feedback:

- Outside experts can provide feedback (Kvan, 2001)

o Asking students to critique online leads to higher level of participation in collaboration (McIntyre, 2007)
o Reviewing the design process of students' works facilitates focusing on the process rather than on the final product (Saghafi, Franz, & Crowther, 2010)
o Unlimited exposure to peer progress is possible (Güler, 2015)
o Immediate response and feedback are possible (McNamara, 2015)
o Students become more self-reliant when it comes to developing their own expertise if an expert is not available in the studio for immediate feedback (Lotz, Jones, & Holden, 2015)

What is the E-Learning Platforms? *"Figure 02"*

Figure 02: E. Learning Platforms "LCMS, LMS, & VLE" – Designed by the author

Several organizations and educational institutions use E-Learning platforms to deliver and manage their learning processes. An E-Learning platform is a set of interactive online services that provide learners with access to information, tools and resources to support educational delivery and management through the Internet. There are a variety of E-Learning platforms with different levels of complexity, but their most important features include:
o E-Learning content management: creation, storage, access to resources.
o Curriculum mapping and planning: lesson planning, personalized learning experience, assessment.
o Learner engagement and management: learner information, progress tracking.
o Tools and services – forums, messaging system, blogs, group discussions.
E-Learning platforms are usually referred to as virtual learning environments (VLEs), learning management systems (LMSs) or learning content management systems (LCMSs). These terms are often used interchangeably, and despite differences between these platforms, they have many features in common. Virtual learning environments, or VLEs "Figure 03", are used to simulate traditional face-to-face classroom activities and facilitate teaching and learning with a strong collaborative component. Examples of VLEs are Moodle and Blackboard.

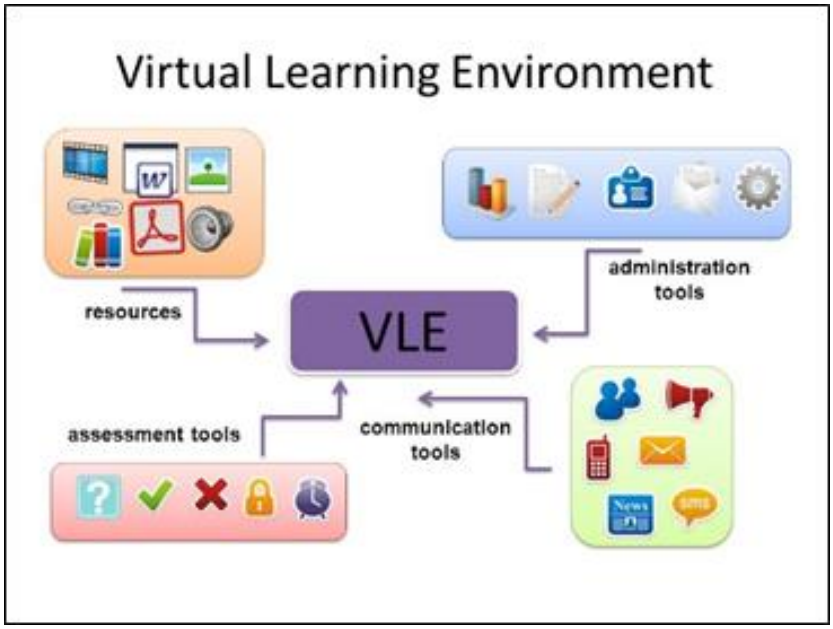

Figure 03: VLE Components - https://slideplayer.com/slide/6841667/ - (Accessed 31.07.2020)

A learning management system, or LMS "Figure 04", solution facilitates delivery and management of all learning offerings, including online, virtual classroom and instructor-led courses. It automates the learning course and easily delivers training, manages learners and keeps track of their progress and performance across training activities, which reduces administrative overhead.

Figure 04: LMS Components - https://www.spectrumlms.com/ - (Accessed 31.07.2020)

Another type of platform is learning content management systems, or LCMSs “Figure 05”, it focuses mainly on creating E-Learning content. In other words, developers and administrators create content material, such as articles, tests, games, video and small units of digital content (content chunks), which then are rapidly assembled, reused and tailored into different courses according to learners’ needs. LCMSs reduce development efforts and allow digital content to be easily repurposed. Both LMSs and LCMSs are designed to manage course content and track learner performance and learning objects, but they differ in their purposes. While LMSs manage and track online activities, classrooms and all sources and events, LCMSs do not manage blended learning, but only the digital content, even at its lowest levels. Basically, there are no functional differences between LMSs and VLEs, but the distinction comes more from the setting in which they operate. LMSs are primarily for training while VLEs are primarily for education. New generations of E-Learning platforms are modular, they consist of “plug-ins” and “add-ons”, software components that extend platforms’ basic functionalities. For example, some LMS applications integrate plug-ins that extend performance management capabilities and support job competency databases, while others include content management capabilities for central storage of all forms of content (e.g. media assets, learning objects).

Figure 05: LCMS Components - https://www.openpr.com/news/2082733/learning-content-management-systems-lcms-market-current - (Accessed 31.07.2020)

What are the scenarios of E-learning used in visual design education?

Blended E-Learning - Gamified E-Learning - E-Learning Nuggets - Active Experimentation

E-Learning systems have various advantages such as reduced costs and increased flexibility for institutions and enable students to be independent on their choices of learning patterns (Li-Tze an Hung, 2015). E-Learning has been implemented by several fields of visual design education in various forms since a considerably long time. It’s worthy to mention that the combination of in-class education with online pre-class assignments, for instance, is a commonly adopted form of learning at different levels of education. Known as blended E-Learning, this scenario takes online systems as core activity and the traditional in class education as a complementary medium for maintaining a concrete interaction between students and teachers. (Li-Tze an Hung,

2015). A good E-Learning implementation would involve the combination of online and offline materials in sufficient levels. As discussed by Graham (2001), a well-designed platform first of all should promote student faculty interaction as well as the collaboration amongst students. The efficient implementation of E-Learning in the framework of courses addressed to life-long learning experiences. Firstly, by increasing the level of interactivity of online platform through the execution of various trends and effective use of media tools. A powerful example is the gamified E-Learning based on several challenges and feedbacks, keeping the learners motivated through its experiential essence. Another compelling trend is the division of a huge content into smaller portions, which is called Micro learning **(E-Learning Nuggets)**. This type of learning materials can come into forms as small videos or visual materials which require no longer than five minutes to watch or have a look at. This type of learning is advantageous for teachers and learners: the greatest variability in student attention arises from differences between teachers and not from the teaching format itself (Bradbury, 2016), but within an online platform environment the quality of the content and how the materials are provided represent crucial elements for a satisfying lecture experience. Second, aside from enriching the online content, embracement of tangible elements such as the workshops, laboratories or lectures that take place in classical learning environment is an effective scenario in E-Learning: this is only one of the reason why the E-Learning experience should include stage of "active experimentation" and "concrete experience" as in the traditional learning cycle (Kolb 1984). This scenario can provide a concrete online environment and rapid interaction, which is challenging to implement by online side of an E-Learning scenario.

E-Learning approaches in the visual design subjects?

There are two general approaches of E-Learning in visual design education: self-paced and instructor-led. Self-paced learners are alone and completely independent, while facilitated and instructor-led e-learning courses provide different levels of support from tutors and instructors and collaboration among learners. Often, E-Learning for visual design courses combine both approaches, but for simplicity it is easy to consider the two separately.

Self-paced E-Learning

Learners are offered E-Learning courseware (also called Web-based training (WBT), which can be complemented by supplemental resources and assessments. Courseware is usually housed on a Web server, and learners can access it from an online learning platform. Learners are free to learn at their own pace and to define personal learning paths based on their individual needs and interests. E-learning providers do not have to schedule, manage or track learners through a process. E-learning content is developed according to a set of learning objectives and is delivered using different media elements, such as text, graphics, audio and video. It must provide as much learning support as possible (through explanations, examples, interactivity, feedback, glossaries, etc.), in order to make learners self-sufficient. However, some kind of support, such as e-mail-based technical support or e-tutoring, is normally offered to learners. When self-paced e-learning is offered through an Internet connection, there is the potential to track learners' actions in a central database.

Instructor-led E-Learning:

In this model, a linear curriculum of visual design is developed that integrates several content elements and activities into a chronological course or syllabus. The design course is scheduled and led by an instructor through an online learning platform. The content of E-Learning for individual study can be integrated with instructor's lectures, individual assignments and collaborative activities among learners. Learners, and instructors can use communication tools such as e-mails, discussion forums, chats, polls, whiteboards, application sharing and audio and video conferencing to communicate and work together. At the end, a final step typically includes an exercise or assessment to measure learning.

The Effective E-Learning Components for Visual Design Subjects: "Figure 06"

Figure 06: E-Learning Components for Visual Design Subjects – Designed by the author

A. E-Learning content

E-learning for visual design subjects' content can include:

- **Simple Learning Resources:**

Simple learning resources are non-interactive resources such as documents, PowerPoint presentations, videos or audio files. These materials are non-interactive in the sense that learners can only read or watch content without performing any other action. These resources can be quickly developed and, when they match defined learning objectives and are designed in a structured way, they can be a valuable learning resource even though they don't provide any interactivity.

- **Interactive E-Lessons:**

The most common approach for self-paced E-Learning is Web-based training consisting of a set of interactive E-lessons. An e-lesson is a linear sequence of screens which can include text, graphics, animations, audio, video and interactivity in the form of questions and feedback. E-lessons can also include recommended reading and links to online resources, as well as additional information on specific topics.

- **Electronic Simulations:**

Simulations are highly interactive forms of E-Learning. The term "simulation" basically means creating a learning environment that "simulates" the real world, allowing the learner to learn by doing. Simulations are a specific form of Web-based training that immerse the learner in a real-world situation and respond in a dynamic way to his/her behavior.

- **Job Aids:**

Job aids provide just-in-time knowledge. They can take several forms and be delivered on different platforms (e.g. computer, printed document, mobile phone). They usually provide immediate answers to specific questions, thus helping users accomplish job tasks. Technical glossaries and checklists are a few examples of simple job aids, but sophisticated expert systems can also be developed to assist workers in complex decision-making.

B. E-tutoring, E-coaching, E-mentoring:

Services which provide human and social dimensions can be offered to learners to support them through the learning experience. E-tutoring, e-coaching and e-mentoring provide individual support and feedback to learners through online tools and facilitation techniques.

C. Collaborative Learning:

Collaborative activities range from discussions and knowledge-sharing to working together on a common project. Social software, such as chats, discussion forums and blogs, are used for online collaboration among learners.

- **Online Discussions:**

Synchronous and asynchronous online discussions are designed to facilitate communication and knowledge-sharing among learners. Learners can comment and exchange ideas about course activities or contribute to group learning by sharing their knowledge.

- **Collaboration:**

Collaborative project work implies collaboration among learners to perform a task. Collaborative activities can include project work and scenario-based assignments.

D. Virtual classroom

A virtual classroom is the instructional method most like traditional classroom training, as it is led completely by an instructor. A virtual classroom is an E-Learning event where an instructor teaches remotely and in real time to a group of learners using a combination of materials (e.g. PowerPoint slides, audio or video materials). It is also called synchronous learning. This method requires the least amount of effort to convert materials (but instructors still must prepare them). Appropriate technology must be in place for both the learners and providers (e.g. software for the virtual classroom and good connectivity).

Quality of E-Learning for Visual Design Subjects:

The quality of a visual design E-Learning course is enhanced by:

Learner-Centered Content: Visual design E-Learning curricula should be relevant and specific to design learners' needs, roles and responsibilities in professional life. Design skills, knowledge and information should be provided to this end.

Granularity: E-Learning content of Visual design should be segmented to facilitate assimilation of new design knowledge and to allow flexible scheduling of time for learning.
Engaging Content: Instructional methods and techniques should be used creatively to develop an engaging and motivating design learning experience.
Interactivity: Frequent learner interaction is needed to sustain attention and promote learning.
Personalization: Self-paced courses should be customizable to reflect learners' interests and needs; in instructor-led courses, tutors should be able to follow the learners' progress and performance individually.

How to assess the Quality of E-Learning Programs:

In 2010, an international quality standard for E-Learning programs "Open ECBCheck", was officially released. ECBCheck is an accreditation and quality improvement scheme for E-Learning programs which supports academic institutions in measuring the success of their programs and allows for continuous improvement though peer collaboration. It was developed through an innovative and participative process involving more than 40 international, regional and national capacity-development organizations. ECBCheck provides a set of quality criteria to assess E-Learning program design, development, management, delivery and evaluation, as well as the quality of learning materials, methodology, media, technology and e-tutoring.
"http://www.qualityfoundation.org/openecbcheck/"

Methodologies for Visual Design E-Learning Subjects:

E-learning exploits Web technology as its basic technical infrastructure to deliver knowledge. As the current trend of academic and industrial realities is to increase the use of E- Learning, in the near future a higher demand of technology support is expected. In particular, software tools supporting the critical task of instruction design should provide automated support for the analysis, design, documentation, implementation, and deployment of instruction via Web. The design of an E-Learning for visual design course should involve using a combination of the following instructional methodologies in "Figure 07".

Figure 07: Methodologies for Visual Design E-Learning Subjects – Designed by the author

Each methodology can be delivered in different formats, using different types of media and communication tools. For example, a presentation can be delivered as a Power Point file or as a recorded (or live) video presentation. An online discussion can be carried out in a discussion forum or through a Skype, Zoom, or Microsoft Teams call. Delivery formats are selected based

on additional factors related to visual design learners, technological and organizational constraints and available time.

A- Expository Methodologies: "Figure 08".

The expository E-Learning methodologies is such a direct explanation from instructor to student. The expository-based E-Learning more emphasized at substance understanding than transforming the critical thinking capacity of the student. Although some said that the expository model is not good enough to use, some proved that the expository model could be useful if the expected learning objective is the student could understand the fact, concept, and principles Expository methodologies emphasize "absorption" of new information. Expository methods include presentations, case studies, worked examples, demonstrations. Expository methodologies require learners to listen and read or observe. The visual design instructor delivers knowledge on a given topic, which can be complemented by tests and exercises to evaluate learners' memorization and/or understanding of the content. Expository methodologies are used for acquiring information, but they can be combined with other methodologies to create different types of learning courses. Expository component is normally used to provide orientation and basic concepts before going into more practical and complex stages.

- **Expository methodologies include:**

1- Presentations: organized information on a specific topic
2- Case studies: real, significant cases related to the topic
3- Worked examples: examples of the topic with comments and explicit reference to the theory
4- Demonstrations: illustrations of how a task can be performed

- **Delivery formats for Expository methodologies:**

o Simple learning content, such as documents and PowerPoint presentations, with no interactivity.

o Interactive E-lessons using text, images, audio, animations and practice (i.e. questions and feedback).

o Presentations made by an expert or instructor which are broadcast in real time or recorded for learners to watch at any time. The lessons can be recorded in both video and audio formats (podcasts).

o Webinar and virtual classroom: The instructors present the content to a group of learners who are connected to the platform at the same time. Learners can interact with the instructor, ask questions and receive feedback using video conference, audio conference or chat. The instructor can use special software called "virtual classroom software". These programs usually include a range of synchronous tools such as whiteboard, application sharing, audio conference and chat. Learners can use these tools to interact with the instructor and other learners.

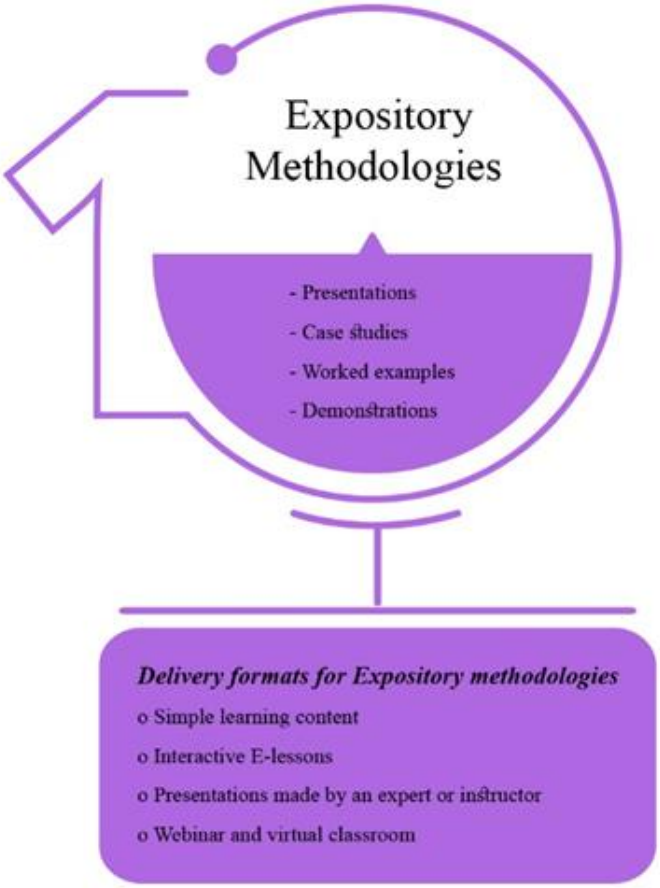

Figure 08: Abbreviation of Expository Methodology for Visual Design E-Learning Subjects – Designed by the author

B- Application Methodologies: (E-Learning by Doing): "Figure 09".

Application methodologies involve the learners in practical activities which can range from simple exercises (such as the demonstration – practice methodology) to more complex methods like simulations or research activities. When using these methods, it is helpful to have a tutor or instructor to provide guidance and facilitate reflection for learners. Application Methodologies emphasize the active processes learners use to perform procedural and principle-based tasks and build new knowledge. Application methodologies (E-Learning by Doing) include demonstration-practice method, job aids, case-based or scenario-based exercises, role play, simulations and serious games, guided research, project work.

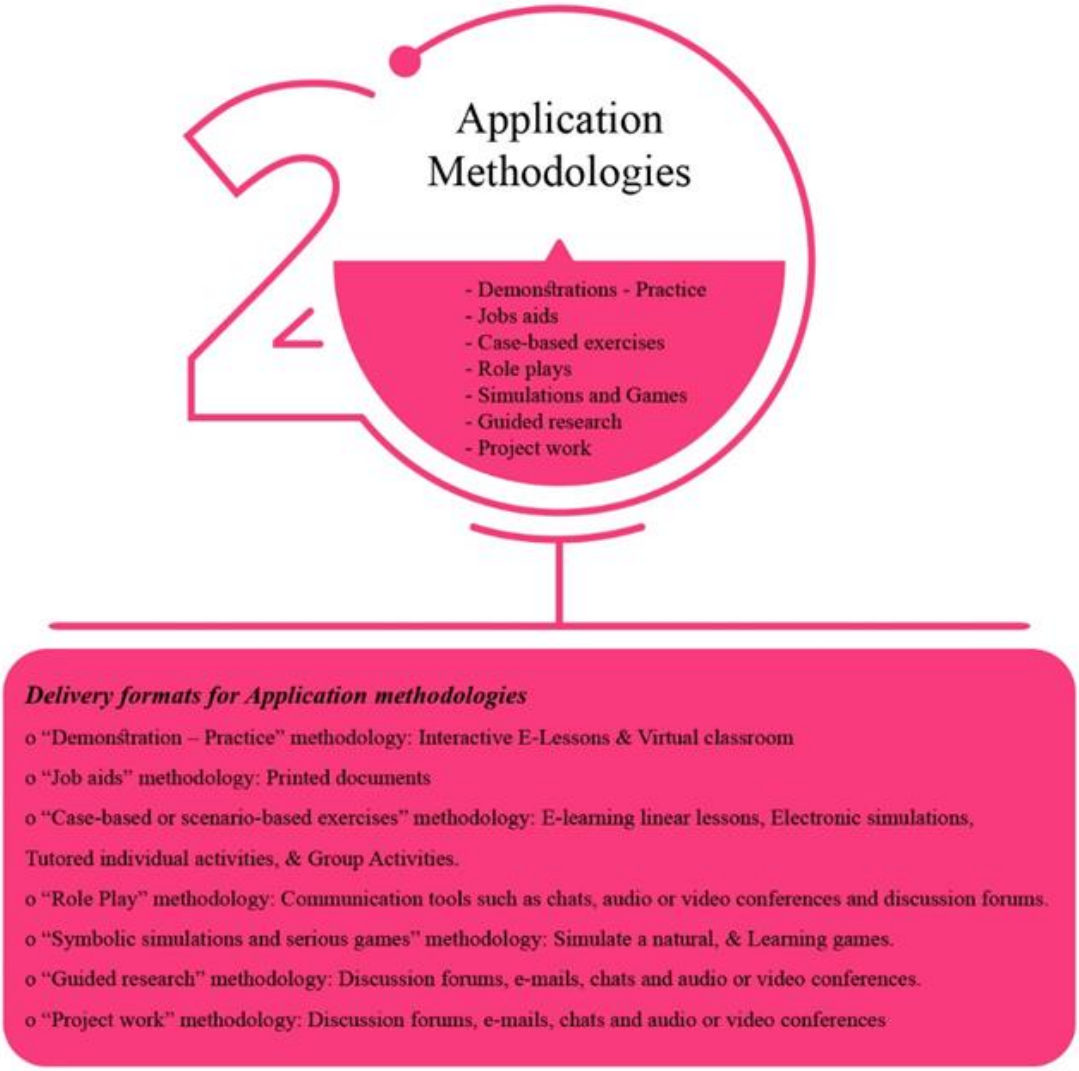

Figure 09: Abbreviation of Application Methodology for Visual Design E-Learning Subjects – Designed by the author

- **Application methodologies include:**

1- "Demonstration – Practice" methodology: This methodology is used to teach a procedure, usually a software procedure, such as how to generate an image manipulation, or digital drawings, video editing, or animation, by using Adobe Creative Clouds software – using directive learning. A procedure is first demonstrated by an expert or instructor, and then learners are asked to practice the procedure by interacting with the system or software.

- **Delivery formats for "Demonstration – Practice" methodology:**

- Interactive E-Lessons using a combination of animations and operational simulations (based on a sequence of operations) that allow learners to interact with the system and receive feedback on his/her actions.
- Virtual classroom in which the instructor shows the application using application-sharing tools and allows learners to take control of the application to practice it.

2- Job aids methodology: Job aids provide just-in-time knowledge. They usually provide immediate answers to specific questions, helping users accomplish job tasks. For example,

learners may be provided with a checklist to help them draft a communication process strategy for a specific audience.

- **Delivery formats for "Job aids" methodology:**
- Printed documents such as checklists, technical art and design glossaries and manuals Online help or more sophisticated interactive online systems.

3- Case-based or scenario-based exercises methodology: Case-based exercises are used to develop cognitive skills in a specific domain. Learners are asked to apply knowledge and principles to a concrete situation. Typically, this method is built around a scenario, e.g. a challenging situation where learners are required to make design decisions by choosing among different product design options to address a specific market based on a given criteria for assessment. Another example, learners may need to select the best method for measuring the impact of an outdoor advertisements campaign on a group of targeted audiences. They are provided with an overview of the assessment methods, criteria and information about the specific advertisements campaign to be assessed. An expert then comments on the learners' choices.

- **Delivery formats for "Case-based or scenario-based exercises" methodology:**
- E-learning linear lessons using text, images, audio, animations and practice (questions and feedback); feedback is provided to learners by comments on the appropriateness of their choices, after which they proceed to the next situation.
- Electronic simulations based on branched scenarios (also called experiential simulations); each learner's choice produces a consequence that generates feedback. The feedback is provided through a follow-up situation that produces more choices.
- Tutored individual activities in which a challenging situation is presented together with the information and tools required to develop a solution to the problem; each learner is asked to develop his/her own solution by using the available information. The tutor can provide feedback during and at the end of the work.
- Activities that are performed by a group rather than an individual; this also provides the opportunity to practice interpersonal skills (e.g. negotiation skills).

4- Role Play methodology: Role play is used to develop interpersonal skills. Learners are asked to apply behavior-related principles (e.g. communication principles) to a concrete situation. Feedback is provided to learners about their behavior. For example, learners may be divided in groups of two people, one acts as the interior designer and the other as the customer who wants to buy modern furniture for his new house. The interior designer must convince the customer to take action and buy the furniture based on the designer's recommendations. After the simulation, the tutor/instructor comments on the learners' performance.

- **Delivery formats for "Role Play" methodology:**
- Role plays conducted as a group activity by learners using communication tools such as chats, audio or video conferences and discussion forums; a specific role is assigned to each learner. Learners interact with each other to achieve individual objectives and/or a common goal.

5- Symbolic simulations and serious games methodology:
- Symbolic simulations are used to develop scientific understanding of complex systems like design management system in organizations. Learners can interact with the system to

understand the underlying dynamics. For example, if learners need to analyze the impact of ambient lights on exhibited artworks in museum or art galleries, they have to observe the different resources of lights that affects on the exhibition as whole.

- **Delivery formats for "Symbolic simulations and serious games" methodology:**

Symbolic simulations, based on the mathematical model of a system, simulate a natural, social or economic system. Learning games are simulations involving a competitive component, a challenging goal and a set of rules and constraints.

6- Guided research methodology: The learners are charged by the tutor or the instructor to conduct research on a specific visual design subject. The instructor can guide the learner in collecting and organizing information. For example, learners may be asked to conduct research on the architecture styles in their own cities. The instructor provides suggestions to learners on how to find the required information and how to analyze the architecture styles based on specific design criteria.

- **Delivery formats for "Guided research" methodology:**
- Discussion forums, e-mails, chats and audio or video conferences for communicating between learner and instructor or tutor. Wikis, blogs and shared documents for presenting results.

7- Project work methodology: The learner is charged by the tutor or the instructor to develop a product design or to do any visual design project by applying design principles and concepts to his/her specific context. For example, learners may be asked to design a book by applying the layout design principles learned during the course.

- **Delivery formats for "Project work" methodology:**
- Discussion forums, e-mails, chats and audio or video conferences for communicating between learner and instructor or tutor. Wikis, blogs and shared documents for presenting results.

A- Collaborative Methodologies: "Figure 10".

"Learner-Tutors" Interaction, and "Learner-Learner" Interaction: these two types of interactions are among humans, and they are the interaction forms that people are most familiar with. Therefore, most research studies are focusing on these two types of interaction, especially in the research of Computer Supported Collaborative Learning (CSCL). According to (Hiltz, and Turoff, 2002) if collaboration rather than individual learning designs were used in an online class, students should be more motivated to actively participate and should perceive the medium as relatively friendly and personal as a result of the online social interactions. This increased active group interaction and participation in the online course, hence, resulted in higher perceptions of self-reported learning. Whereas individuals working alone online tended to be less motivated, perceive lower levels of learning, and score lower on the test of mastery. Collaborative methodologies are based on dialogue and discussion among instructors and learners. They add a social dimension to the learning experience, applying the principles of social constructivism and collaborative learning. They allow learners to benefit from having discussion partners and getting personal feedback. Collaborative Methodologies emphasize the social dimension of learning and engage learners sharing knowledge and performing tasks in a

collaborative way. They include online guided discussions, collaborative work and peer tutoring. “Figure 10”.

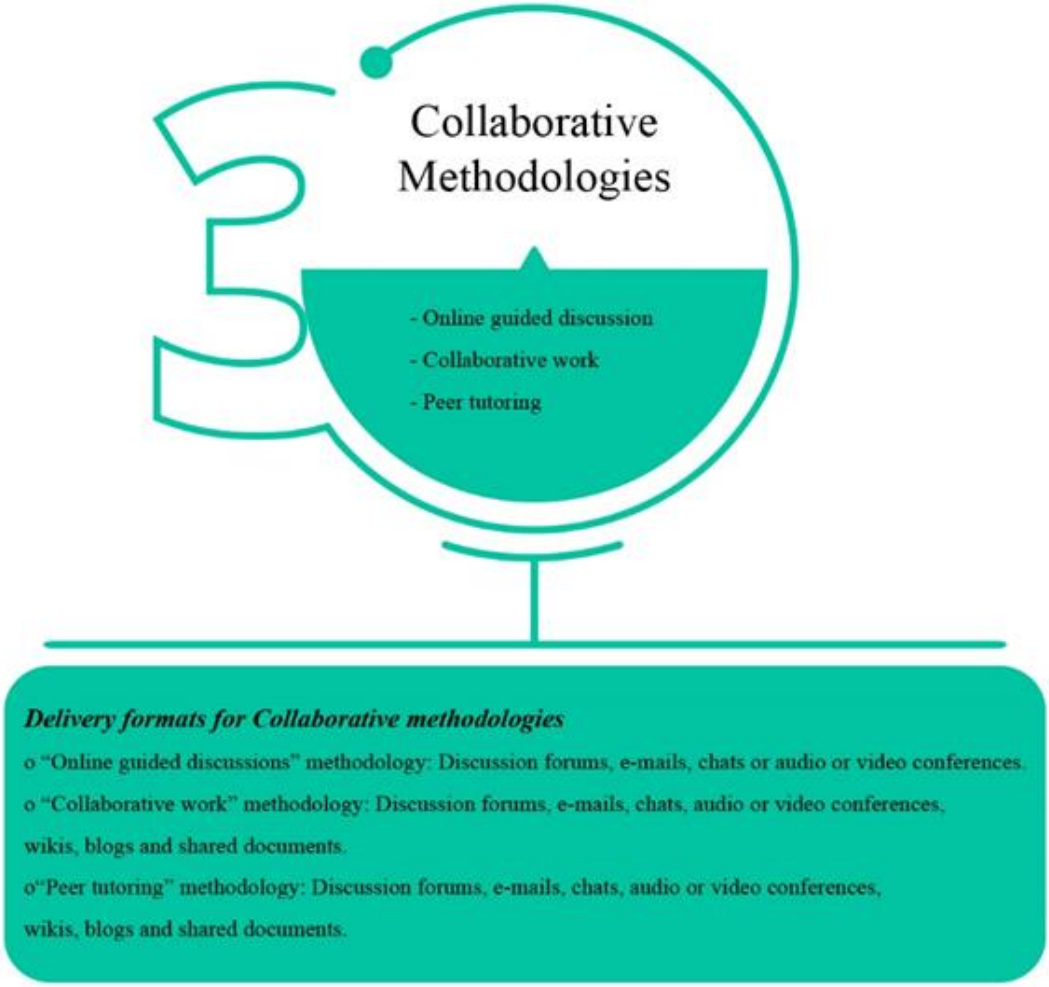

Figure 10: Abbreviation of Collaborative Methodology for Visual Design E-Learning Subjects – Designed by the author

- Collaborative methodologies include:

1- Online guided discussions methodology: Guided discussions are designed to facilitate learning and improve knowledge and skills. The instructor asks learners questions to stimulate and guide reflection and critical thinking. These discussions usually complement other methods, such as a presentation, research or a case-based exercise. Guided discussions also facilitate communication and knowledge sharing among learners. For example, after individual research on packaging recycled systems, learners may be asked to describe to the instructor and the other learners how those systems work in their own countries.

- **Delivery formats for “Online guided discussions” methodology:**
- Discussion forums, e-mails, chats or audio or video conferences.

2- Collaborative work methodology: Learners work together to perform different types of activities, such as evaluation, analysis or development of an assignment or a design project. This method requires learners to collaborate, listen to each other, argue and negotiate; they develop interpersonal skills other than domain-specific and problem-solving skills. For example, learners may be divided into small groups and charged to analyze the impact of

audiences' demographic factors on design process, by applying the topics learned during the course. Each group must provide an analyzing report as an outcome of the assignment.

- **Delivery formats for "Collaborative work" methodology:**
- Discussion forums, e-mails, chats or audio or video conferences to communicate among learners. Wikis, blogs and shared documents for collaborative work.

3- Peer tutoring methodology: Learners monitor and support each other. They have the opportunity to learn from each other's work and to practice tutoring methods. This is a useful method for train-the-trainer projects. For example, each learner may be asked to review a design management report developed by another learner, and to provide suggestions on how to improve the document according to the principles learned during the course.

- **Delivery formats for "Peer tutoring" methodology:**
- Discussion forums, e-mails, chats, audio or video conferences, wikis, blogs and shared documents.

A Suggested E-Learning Structure for Visual Design Subjects:

From my extended experience in E-Learning structures, I do suggest specific structure suitable for visual design courses, that may include:

- **The Online Lectures: Creating an Engaging Lectures:**

There are various approaches to delivering the core lectures materials of visual design subjects, like use streaming videos, and MOOC "Massive Open Online Courses" platforms (McNamara, 2015), such as Canvas Network, FutureLearn, Udacity, Udemy, EDx and Coursea. The most common video approaches are voice-over presentation slides (screen cast); classroom recordings; filmed group conversations/interviews; and the talking head style where the presenter either sitting or standing talks directly into the camera. Video lecture length is highly considered critical in retaining student interest in the subject materials. (Brame, 2016) published on principles and guidelines for maximizing student learning from video content, identified three critical aspects to consider when making videos: the cognitive load, student engagement, and active learning. Students learn better when important information is highlighted in the videos; for example, key words can be used to highlight important elements on screen. Segmenting information into smaller chunks is another strategy that can be used to help and encourage students learn and remain engaged. Following suggestions by (Coyne, Lee, and Petrova, 2017), who used online videos effectively in a flipped classroom model for design education, the design educators recorded lectures running 8 to 15 minutes per video. During recording, design educators talked directly to the camera using a personal, enthusiastic, and friendly tone–often employed in the studio setting–to connect with student viewers, as is recommended by (Brame, 2016). A post-production team add graphic elements, such as summarizing lists, keywords, images, and animations. (Brame, 2016) suggested using shorter videos (6 minutes or less) to cater to students' attention spans. (Coyne, Lee, and Petrova, 2017) discovered that students become easily overwhelmed when too many choices are offered.

- **Developing Design Software Proficiency as a weekly basis activity:**

Besides learning design theories, principles, developing creative potential, and critical thinking skills, design students needed to become proficient in industry-standard design software, such as Adobe Photoshop "image editing and manipulation program", Adobe Illustrator "a vector

graphics program for creating logos, illustrations, and typography", 3D Max "3D modelling, animation, rendering, and visualization", and others design programs. Although there are a multitude of free software tutorials available on the internet, it's recommended to use a professional online provider "Lynda.com" which specializes in the production of learning videos for the development of business, software, and creative skills.

- **Tutorial Tasks and Assessments as a weekly basis activity:**

To encourage students to apply their acquired design knowledge and software skills in their design projects, weekly tutorial tasks have to be assigned to assess students on both practical design assignments and theoretical tests. The tests are always given monthly, in the midterm and at the end of the semester to test knowledge of lecture materials and to encourage students to watch the online videos, presentations and others course materials. Each assessment is introduced by posting the assessment sheet online, followed up with a meeting in a virtual classroom to allow students to ask questions about the assessments directly. Assessment grades and feedback have to be available on the LMS via the online gradebook and rubrics which included additional feedback comments.

- **The Studio Critique in the Online Space: Simulating the Critique as E-Learning Opportunity:**

It's widely known in the fields of visual design, a great significance is given to the studio critique in design education, students are actively encouraged to engage in the cycle of action and reflection through receiving and giving feedback. Students are asked to upload their work on the E-Learning platforms such as Blackboard, (LMSs), (VLEs), and (LCMSs). They upload to the discussion board to receive feedback from the design instructor on the progress of their work. Students are also asked to provide feedback for the uploaded work of their peers. This activity is intended to help students learn to explain their thinking and give constructive feedback. The feedback is always in the form of written comments.

- **Building a Community: Online Meetings and Communication**

To further build the sense of a community among visual design students and to offer the opportunity to ask questions directly, the design instructor set up collaborative sessions. The collaborative session is described as "a simple, convenient and reliable online collaborative learning solution that makes learners feel like they're together in the same room". A virtual collaborative classroom is felt to be a constructive attempt to engage students more actively. however, schedule online meetings could disrupt the flexibility of the online class. some students would not be able to attend the meeting on a particular day/time. To circumvent possible problems, the collaborative sessions is recorded and made available to students who could not attend.

Results

o Technology impacts every stage of the visual design process, from ideation to implementation.

o Blended learning is a middle ground to introduce online elements to visual design classes.

o Early research recognized the power of the internet for collaborative projects in visual design education.

o Ease of navigation, the smooth operation of technology platforms and tools, and well-designed modules are critical to the success of student-centered virtual design studios.
o Asking visual design students to critique online leads to higher level of participation in collaboration.
o Reviewing the design process of students' works online facilitates focusing on the process rather than on the final product
o In the visual design online education students become more self-reliant when it comes to developing their own expertise.
o In the visual design online education, unlimited exposure to peer progress is possible, and immediate response and feedback are possible.
o New generations of E-Learning platforms are modular, they consist of "plug-ins" and "add-ons", software components that extend platforms' basic functionalities.
o There are different scenarios of E-Learning can be used in visual design education, such as Blended E-Learning, Gamified E-Learning, E-Learning Nuggets, and Active Experimentation.
o There are two general approaches of E-Learning in visual design education: self-paced and instructor-led.
o The effective E-Learning components for visual design subjects can include Interactive E-Lessons, Electronic Simulations, E-tutoring, E-coaching, E-mentoring, Collaborative Learn, and Virtual classroom.
o The quality of a visual design E-Learning course is enhanced by Learner-Centered Content, Granularity, Engaging Content, Interactivity, and Personalization.
o The design of an E-Learning for visual design subjects should involve using a combination of the instructional methodologies which are Expository Methodologies, Application Methodologies, and Collaborative Methodologies, in order to maximize the students benefits.
o The Expository-based E-Learning methodologies emphasize at substance understanding than transforming the critical thinking capacity of the student. It also emphasizes "absorption" of new information.
o Application methodologies (E-Learning by Doing) involve the learners in practical activities which can range from simple exercises to more complex methods like simulations or research activities. Application Methodologies emphasize the active processes learners use to perform procedural and principle-based tasks and build new knowledge.
o Collaborative Methodologies emphasize the social dimension of learning and engage learners sharing knowledge and performing tasks in a collaborative way. They include online guided discussions, collaborative work and peer tutoring. It adds a social dimension to the learning experience, applying the principles of social constructivism and collaborative learning.

Discussion

Because online learning environments are relatively new to visual design programs, it offers new challenges as well as opportunities. Academic goals must be matched with available technology without limiting the creativeness of the visual design educators. We may need the opportunity to explore new technologies, investigate alternative E-Learning modes, and participate in a sample online course. As technology becomes more transparent in the learning process and offerings of online visual design courses continue to rise, knowing how technology impacts teaching and learning is imperative for all design educators. Once the technology tools

are mastered, it's not much different than creating and teaching a traditional course. Like many design educators, the author was skeptical that design subjects could be delivered fully online. That skepticism arises from design's traditional studio-based culture and project work which requires an iterative process based on face-to-face feedback and a dialogical approach to teaching and learning. This paper attempted to pinpoint that the design studio environment could be translated into a successful online learning experience. This paper prove that a traditional visual design course can be transformed into a fully online learning experience. This paper recognized that the best practice to make distinct and effective E-Learning course for visual design subjects, should involve using a combination of online teaching methodologies including: Expository Methodologies, Application Methodologies, and Collaborative Methodologies.

Conclusion

The growth of online visual design education has become a global phenomenon driven by the emergence of new technologies, widespread adoption of the Internet, and intensifying demand for a skilled workforce for a digital economy. Online visual design education is no longer a trend; it has become mainstream. Early research recognized the power of the online visual design education for collaborative projects in visual design education. In the visual design online education students become more self-reliant, because of there are unlimited exposure to peer progress is possible, and immediate response and feedback are possible too. The reviewing of students' artworks online facilitates focusing on the process rather than on the final product and critique online leads to higher level of participation in collaboration. The new generations of E-Learning platforms such as LMS, VLE, and LCMS, are modular, they consist of "plug-ins" and "add-ons", that extend platforms' functionalities. The best practice of E-Learning for visual design is to use a combination of scenarios such as Blended E-Learning, Gamified E-Learning, E-Learning Nuggets, and Active Experimentation. Also, the best practice of the design of an E-Learning for visual design subjects is to use a combination of the instructional methodologies which are Expository Methodologies, Application Methodologies, and Collaborative Methodologies.

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