

Instructional Design for ALAM Learning Management System (LMS): Transforming storyboard pages into Adobe Flash Interface/presentations

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ABSTRACT

The electronic learning is gaining its significance either in complementing or replacing the traditional learning worldwide. This trend has also impacted the maritime education and training (MET) sector in Malaysia in which the eLearning poses challenges to the traditional delivery of the STCW (Standards of Training, Certification and Watchkeeping for Seafarers) courses. Trainers, as the prime movers of MET, have to explore and exploit the powerful features of eLearning in the delivery of their daily lessons. The Learning Management System (LMS) is the best platform to begin with as it provides the required facility to integrate innovative teaching approaches in classrooms. But the actual challenge is to develop and create interactive multimedia content for the LMS, as the content serves as stand-alone learning objects which can be accessed as anytime and anywhere by students. Hence, this paper sheds lights on the most practical part of the generic ADDIE model in Instructional Design, in which trainers cum developers move from pages of storyboard (planning stage) to the interface of the authoring software (development stage) when creating interactive multimedia content. Hopefully, this addresses the confusion and shortcomings in the critical development stage of any interactive multimedia content.

Keywords: LMS, Instructional Design, storyboard, Adobe Flash

INTRODUCTION

The advent of information and communication skills (ICT) has made many institutions and universities in Malaysia embarked on multimedia learning as part of their academic systems. One of the aims of this integration is to provide better and comprehensive materials to students at any place and at any time, so that they will be able to gain extra input and learning in addition to formal lectures. Moreover, multimedia learning and lessons are able to generate more interests of the students in the lessons especially topics that demand high concentration and conceptualisation.

Considering the advantages of these multimedia lessons, Akademi Laut Malaysia (ALAM) has already embarked on 'small scale' pilot project to offer online multimedia lessons to its cadets. This paper shares the experience of authors in developing multimedia lessons for Maritime English with specific focus on the development part, in which the transformation from storyboard (planning and design stage) to authoring screen (multimedia authoring and lesson development) is done. In other words, the paper explains the shift from storyboard to Adobe Flash interface so as to benefit all instructors, trainers and developers.

BRIEF LITERATURE REVIEW

The electronic learning or e-learning has been preferred for course delivery and instruction and this has reshaped lesson delivery worldwide (Manolache, 2006, p.1). To begin this initiative in maritime education and training institutions, Manolache (2006) emphasized that instructors need to revise their teaching paradigms, learn and integrate instructional design approaches and create their own multimedia lessons. Therefore, to accommodate this educational shift, it was decided to upgrade the current lessons into multimedia format for impressive start in e-learning at ALAM.

Yong Kim (2016) emphasized the role of instructional designer for beginner instructors embarking on their first project in e-learning. Instructional designer's task in e-learning, no matter how small or big is the project; is to 'make and deliver multimedia contents to learners' (Yong Kim, 2016, p.1). In normal classes, the subject contents have been originally planned and designed by subject instructors and they teach students based on their own instruction strategies. But in LMS, learners are connected only by the contents and the presentation of these contents. Hence, there is a heavy reliance here on the instructional designer to replace teacher's instruction strategies with multimedia instructional interfaces. This notion has been shared earlier by Babiker (2015), in which instructors must take charge in designing the multimedia lessons. This is due to the fact that the instructors themselves actually 'oversee the overall process, from curriculum design, software used, hardware installed, lessons conducted and evaluations made' (Babiker, 2015, p.62). They shall make informed decisions based on their needs, readiness, existing technology, existing levels of students, infrastructure and evaluations.

Rubegni and Landoni (2018) stressed on the need of a prototype lessons to be created for first time instructor cum developer of e-learning @ multimedia lessons. However, they noted the challenge from transferring 'planning stage' which is the storyboard, to the 'digital stage' which is not easy especially with high end software like Adobe Flash. This is in conjunction with Ostroumov (2016) who believed that this 'first development stage' is the most important as it determines the most valuable part of e-learning (p. 89).

STAGES IN DEVELOPING MULTIMEDIA LESSONS FOR E-LEARNING

Obviously, there are three stages that instructors must go through when they embark on multimedia learning, digital lessons or eLearning project. Zheng (2005), Manolache (2006), Babiker (2015), Ostroumov (2016), Yong Kim (2016) and Rubegni & Landoni (2018) reported that the instructors must go through stages in instructional design, multimedia resources and multimedia authoring.

Instructional Design Stage

To be able to develop and produce multimedia lessons or courseware for teaching, the instructor concerned must go through planning stage which is the instructional design stage. Over here, some sort of formal training in instructional design or instructional system design (special and short courses or academic upgrade courses) is a must to be able to plan multimedia lessons both on paper and later on screen.

Grafinger (1988) stated that instructional design (ISD) is the stage where instructors plan multimedia lessons, select the appropriate framework and lessons, decide on the learning presentation and prepare storyboard for the development work, implementation and evaluation. There are many ID models being used nowadays such as ID (Instructional Development Institute) model, Dick & Carrey's ID model, Gerlach and Ely ID model, ASSURE model and ADIIE. All models *'have many common features and the differences between them are in the emphasis placed on the various stages of the design process'*

(Grafinger, 1988, p. 3). The most popular model is called ADDIE that stands for Analyze, Design, Develop, Implement and Evaluate. However, to understand ISD or ADDIE takes some time and efforts. The success of the ISD stages such as storyboarding and planning will ensure the success of the multimedia lessons itself. In a nutshell, the stage where an instructor transfers lesson plans and teaching materials into storyboard format and then visualise the 'screen layout' of the target multimedia lesson is crucial to the completion of the target lessons.

Multimedia Resources Stage

This stage requires instructors to have special technical skills in creating, finding and integrating the appropriate pictures, images, sounds, text styles, video clips and animations. Furthermore, this stage is as taxing as the previous stage because instructors must know the type of files that are suitable for lessons and then work to source for them, including producing all the files by their own if needs arise. The most possible solution is to resort to the internet to find as many resources as possible but they may not be that suitable for lessons in terms of size, resolution and adaptability.

Multimedia resources are expensive to be produced (Babiker, 2015). This is due to the several related software, skills, competency and knowledge that one should have in order to produce a single media file. Usually, these multimedia resources will be handled by a team of IT experts who produce them collaboratively. Nowadays, there are certain prices that developers of multimedia lessons must pay for these multimedia files either for education or commercial use. Many also are copyrighted and used exclusively as well as many are also available as freeware. It is up to the instructors cum developers to carefully select the resources that suit their lessons.

Multimedia Authoring Stage

The last stage focuses on the task where instructors 'write' or 'author' the contents of their multimedia lessons. 'Multimedia Authoring' here means the skills and knowledge in using professional or commercial authoring software to create a multimedia content either for commercial or for personal use (Neo, 2002; Neo & Neo, 2003).

Moreover, according to Neo & Neo (2003), even though multimedia authoring skills are regarded to be difficult to master, the availability of freeware/practical tutorials provided by third parties has made this 'rare' skill more common nowadays. In this stage also, selecting the most suitable software to be used in developing the multimedia lessons is done to ensure project completion. The commonly selected authoring software must be '*user-friendly, less complex, easily used, systematic and compatible with most operating systems*' (Neo, 2003; Babiker, 2015; Yong Kim, 2016 and Ostroumov, 2016). Accordingly, Adobe Flash, SwishMax, Adobe Director, Authorware and ToolBook Instructor are commonly used by developer-instructors in creating rich multimedia contents. These products are available commercially or by freeware/trial copies to suit the purpose.

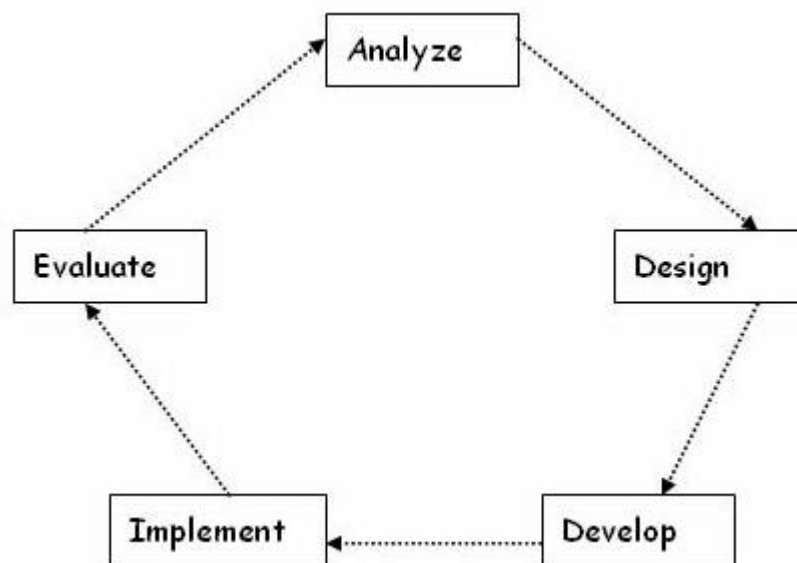
However, suffice to highlight here that this is the very stage where many instructors face dead end or difficulties in completing the multimedia contents. This is due to the fact that multimedia authoring can be considered as difficult as programming and computing skills, which demands not only experience and familiarity with the software/tools, but also creativity, computer literacy and instructional competency. Hence, the involvement of multimedia programmer or creative artist is the norm at this stage to ensure success in completing the desired multimedia contents. In this case, it is the Adobe Flash that needs to be mastered to ensure rich interactive multimedia contents. The authoring skills via Adobe Flash can be refined over a certain period of time and in this situation, over a few tryouts with the 3 process cycles as elaborated before.

PRACTICAL SOLUTIONS AS EXPERIENCED AT ALAM FOR LMS

Realizing the complexity of the three stages as stated before, the writer has planned a simple multimedia lesson for a significant start in LMS. Even though the approach replicates professional courseware development strategies, there have been some modifications to suit the timeline of the project and writer's abilities in producing the multimedia lessons. This is normal as professional developers also refine their instructional skills from one project to another.

In order to produce multimedia lessons in Adobe Flash format (SWF) for ALAM's first Learning Management System (LMS), the writer had earlier allocated a week to plan (Stage 1 and 2) and develop/author (Stage 3) a lesson on '*Subject-Verb-Agreement*' as part of Business English and Maritime English lesson components. The ID model chosen is none other than the generic model in instructional design, which was the ADDIE model (ADDIE stands for Analyze, Design, Develop, Implement and Evaluate). ADDIE spells out the development stage of the multimedia lessons or any educational courseware, which benefits the course instructors themselves. The five stages in this model specify what to be done and guides further the whole process of content development. An adaptation of the generic ADDIE model was done to guide the lesson development in multimedia, particularly the '*Develop*' component. **Figure 1** briefly explains ADDIE for quick reference.

Figure 1 ADDIE Model for planning multimedia lessons



The most emphasized and the most important method at this stage is the storyboard, which forms the basis of the target lesson ('*Design*' component). Over here, the writer transferred normal lesson contents on '*Subject-Verb-Agreement*' into storyboard format, which must be printed on paper according to specific systematic format. This format is transformed into page by page layout of the '*Subject-Verb-Agreement*' lesson on the computer screen. These pages were actually the pages of the planned multimedia lesson from the beginning until the end of the lesson. This enabled the writer to have visualization of the multimedia lesson contents in paper format or is better known as 'screen layout' of the target multimedia lesson for quick visualization of lesson in computer interface. **Figure 2** shows the actual screen shot of the storyboard for '*Subject-Verb-Agreement*'. This

transformation is not easy as it requires pedagogical skills, creativity, screen orientation, screen layout and anticipation of interactive features including the flow and continuity of lesson. It is important to note here that whatever had been decided and finalized on paper would appear exactly the same on every page of the ‘Subject-Verb-Agreement’ lesson in Adobe Flash presentation format. This task may take longer time that expected as instructors turned designers need to decide on the best way to integrate multimedia elements, interactivity of each page and each section of page, button and screen layout, color scheme, hyperlink to other pages, flow of lessons and not forgetting, the convergence of all elements at once or at intervals. It is somewhat difficult to visualize something that is still not there and a lot of mental visualizations/creativity/anticipation will take place at this stage.

Figure 2 The storyboard for the lesson

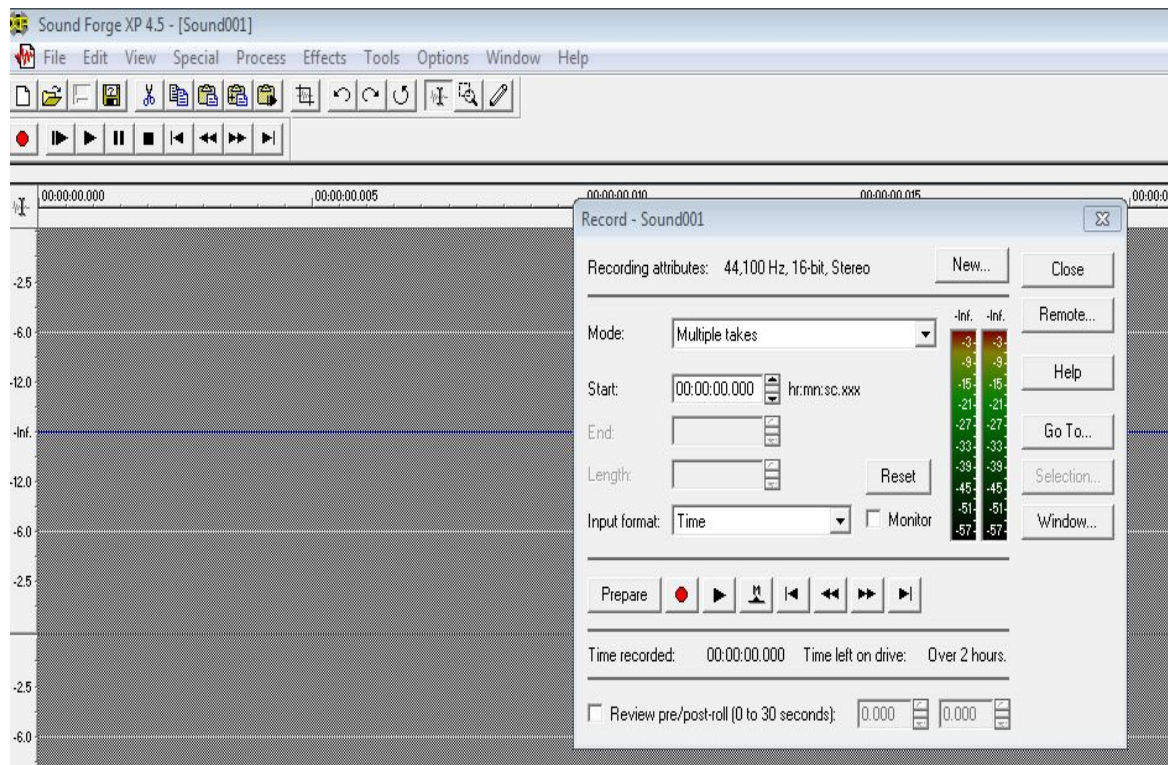
STORYBOARD
 Storyboard No: 1 Page No: 6
 Title: Subject-Verb-Agreement

Screen	Media Instruction
<p>SUBJECT-VERB-AGREEMENT RULES</p> <p><u>SVA Rule 1</u></p> <p>A verb must agree with its subject accordingly. If the subject is singular, the verb is singular.</p> <p>Example:</p> <p>⊙ The Captain <i>laughs</i>. (Animation)</p> <p>⊙ The Chief Officer <i>is supervising</i> the cargo loading. (Animation)</p>	<ul style="list-style-type: none"> • Hypertext – SVA rules 1 • Voice over on the rules • Click button. Animation: on the examples <u>The</u> word “Vampire” is flying, arrow pointing to the word as singular subject and the word “laughs” is shaking with arrow pointing to the word as singular verb. Click on the sentence, it becomes static. • Click the button and the second example appears immediately. The word “werewolf” appears with the background sound of howling, an arrow pointing to the word as singular subject followed by the word scratched pointed as singular verb. The rest of the sentence appears immediately after that. • Third example starts after the button is clicked. The word

The next stage requires the writer to find and gather multimedia resources for the storyboard or multimedia lessons. The normal practice for any developer is to search for as many freeware as possible in order to save time and expenditure. However, for the ‘Subject-Verb-Agreement’ lesson, the writer had decided to develop and produce his very own multimedia files including images, audio clips, video clips, sound effects and even narrations of the lesson. Using high resolution digital camera, the writer went around snapping photos and record short video clips to be included in the multimedia lesson. For image editing purposes, image editing software such as Windows Paint and Adobe Photoshop CS were used to get the appropriate resolution and images. For producing audio files, an old school voice recording and editing software named SoundForge XP was used. This software enabled the writer to record voice narration and then saved them into MP3 format. If there had been a need to edit a particular sound file, direct editing could be performed almost

instantly via SoundForge. **Figure 3** shows the screen capture of narration recording which was done via SoundForge XP.

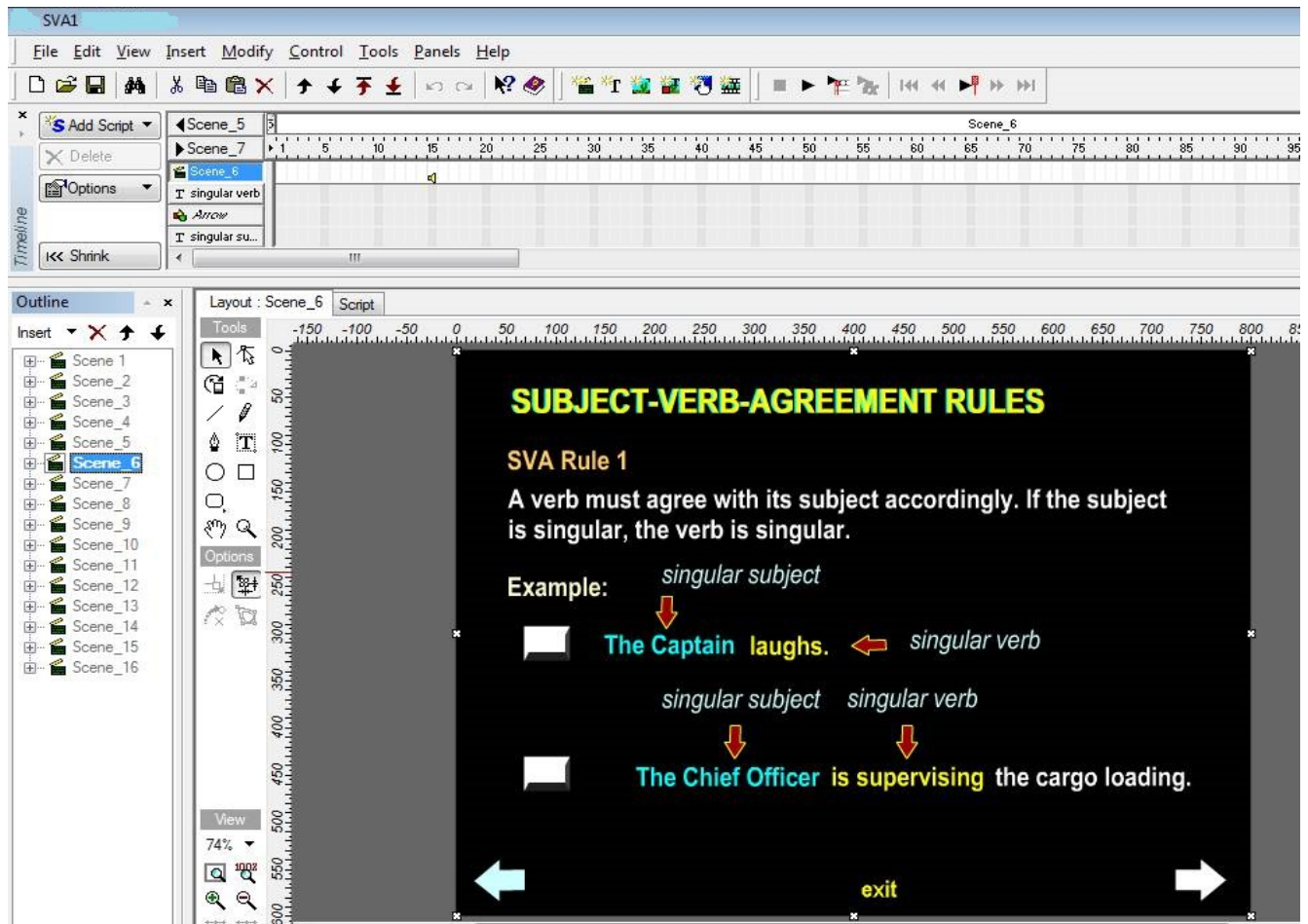
Figure 3: Screenshot of narration (voice-over) recording with SoundForge XP



The advantage of producing own multimedia resources is having the degree of control over all resources. Undoubtedly, there is no restriction in using any of the image, audio, video, animation, graphic and background music as there is no other party's copyrights on it. Moreover, there is freedom in editing or modifying own multimedia resources and then publish them online. These files are transferrable across any medium or platform and they too could be assets for commercialization as well. It was in the writer's intention to have all these files as freeware files which could be used later by any content developer in near future.

The final stage in the multimedia lesson development was the authoring stage which involved Adobe Flash programming. This software needs familiarization and time to master as it has been considered one of top notch professional designer's authoring tools. With enough exposure, time and familiarization on the capabilities and features of the software, any instructor could develop multimedia lessons on his own with Adobe Flash. It is important to mention here that the amount of time spent on authoring the lessons via Adobe Flash actually depends on the amount of exposure and experience that the instructor has in it. For the purpose of development, the writer took about 1 hour to create the page as indicated by the storyboard including the layout and colour scheme. Then, another hour was dedicated on creating buttons for the page navigation (links to previous and next page) including the scripting for the buttons (so that they are fully operational). The hardest part was creating and designing the animation so that the examples, '*The Captain laughs*' and '*The Chief Officer is supervising the cargo loading*' can be presented in a step by step approach for better student understanding or for better instruction. **Figure 4** presents the actual screen layout page on Adobe Flash work area for the storyboard, '*Subject-Verb-Agreement*'.

Figure 4 The actual page of the lesson on Adobe Flash work area based on the layout of Storyboard in Figure 2

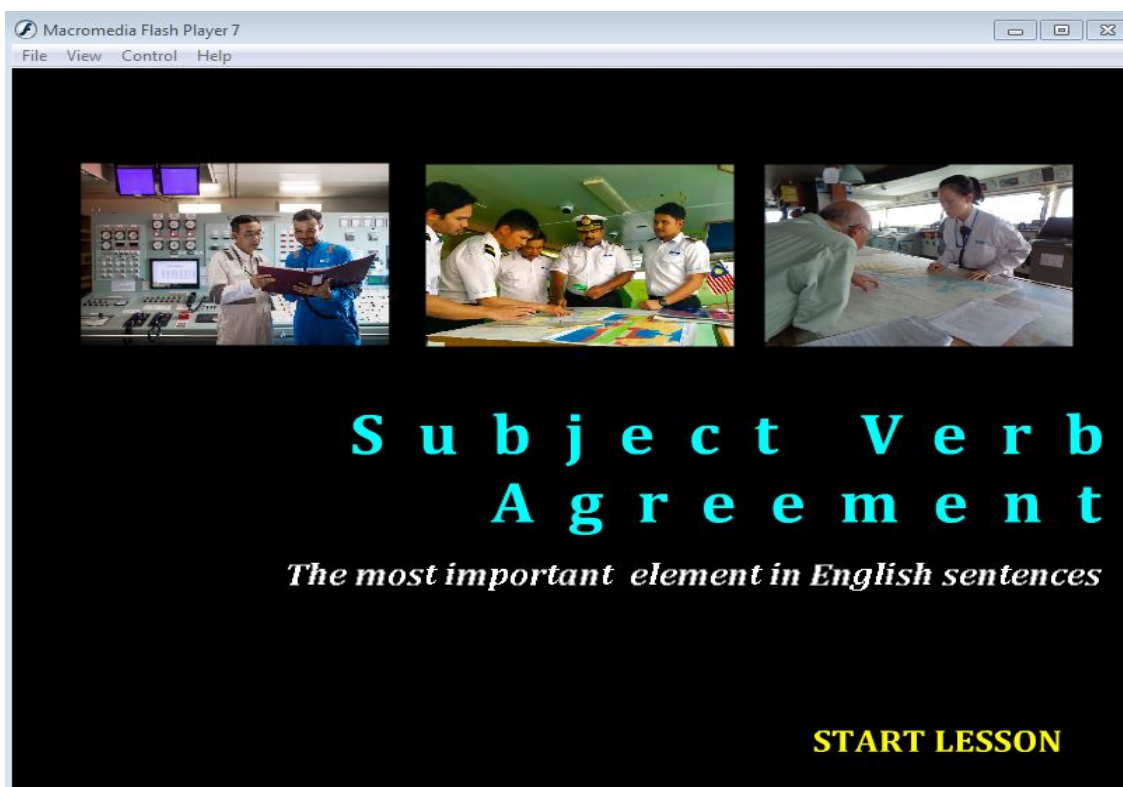


The steps in transforming the storyboard pages into Adobe Flash presentations are meant to be replicable. This is with the noble intention to benefit all instructors who have the enthusiasm and interest in creating their own multimedia lessons. The steps used by the writer may somewhat be followed by other instructors or novice content developers to make their first step in multimedia content development, in a module format. All in all, it is highly hoped that there will be more instructors opting for creating and developing their own multimedia lessons and this will enlarge the pool of home grown multimedia experts from instructors themselves, particularly from the maritime and education institutions.

The work area and interface on Adobe Flash are not that complicated. But the menu, tools and functions of Adobe Flash must be mastered first before deciding to embark on such instructional design project. The customization of button and features can be learned in less than one week's time, which is considered very short in multimedia authoring software orientation. The end product can be saved or exported as Flash file, with the file extension of (SWF). Less technical savvy person like the writer could easily find the desired buttons and functions when creating the desired lesson. The software comes with its own tutorials like other professional or semi professional authoring software but they are enough to make a beginner understands all the functions, buttons, interface and etc. The automated effects and functions of animation impress learners who browse the lesson. A simple animation may take many frames and scenes to be completed but the astounding effects of attracting learners are effective and interactive in nature.

The most important part that the writer had in mind upon moving from storyboard to screen interface was a step by step process in explaining lessons to audience/viewers/students. This is due to the fact that the Adobe Flash presentations replace the instructor's presence with their interactivity and multimedia contents. This has made explanations to be done systematically by the multimedia content itself particularly in delivering lessons to learners since there is no instructor or teacher on site to provide the explanation and do the teaching. This re-emphasizes the need for instructors to become multimedia content developers for LMS. The presentation of information i.e. lessons to learners must be done through the eyes of instructors as if the lesson is being taught by them in face to face classes. Hence, teaching process will still take place but in the form of stand-alone multimedia learning objects in non-face to face learning. Instructors must realize that learners depend solely on the presentation of content in multimedia to gain understanding of the lesson. Consequently, this makes the process of planning, designing and developing a multimedia lesson more thorough and complicated. The combination of planning, anticipation, creativity, logical sequencing and pedagogical skills took place here at the highest level so as to resemble the actual teaching done by instructors in normal face to face classrooms. It can be summarized here that it is the mind and role of instructors and teachers in this multimedia authoring stage that makes the multimedia lessons successful. **Figure 5** shows the completed demo multimedia lessons in Adobe Flash presentation file (SWF format).

Figure 5 Main page of Subject-Verb-Agreement lesson



CONCLUSION

In conclusion, if given ample time, resources, support and training, creating multimedia lessons in Adobe Flash presentations for Learning Management System (LMS) is not that difficult. Any instructor could begin exploring the software as well as the whole development process. Indeed, the stages and process are replicable and could benefit all beginners in multimedia content development. It is also in the aspiration of the writer to make

instructors believe that developing multimedia lesson is an achievable task. The most important point to highlight here is that they must take the initiative to find and execute practical methods in multimedia content development, without having to face dead ends.

It can also be summarized that it is the enthusiasm, initiatives and roles of instructors that make multimedia lessons become reality and successful. Multimedia contents must be developed from the point of view and minds of instructors or teachers. It is the pedagogy and teaching approaches that ensure the effectiveness of multimedia content presentation to learners. Hence, maritime education and training institutions should encourage instructors to transform 10%-30% of their lessons into stand-alone multimedia contents. Courseware development is no longer an exclusive right of multimedia developer team comprises of instructional designer, software developer, subject matter expert (maritime instructor) and multimedia manager. Instead, instructors in maritime education institutions are also capable of shouldering the responsibilities, if they are positive about exploring, planning, designing, completing, implementing and evaluating multimedia lessons. From this point onwards, it is also aspired that there will be more studies on similar topic to benefit multimedia content development in the maritime education and training sector.

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