Online Videos for Specific Purposes

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Abstract *Many EFL/ESL college students, enrolled in colleges and universities that use English as a medium of instruction have difficulty understanding lectures in specialized courses delivered in English such as engineering, medicine, dentistry, pharmacy, biology, biochemistry, anatomy, physiology and others. To help students improve their listening comprehension skills, develop their repertoire of specialized technical terms and fill the gaps in their background knowledge, class lectures can be supplemented by specialized online videos. This paper aims to show the advantages of integrating specialized online videos, give samples of websites where specialized online videos can be downloaded, describe the criteria for selecting specialized online videos, outline the skills that can be developed through supplementary specialized online videos, and present a scheme for phases of teaching and learning with specialized online videos. It concludes with some recommendations for creating a specialized online video repository.*

Keywords: *Online videos, ESP, EFL students, college students, listening skills, technical terms, specialized lectures*.

1. Introduction

Today, the use of online videos in the classroom is becoming more and more commonplace. Online videos provide learners with content, context and language, and play an increasing role in both ESL classroom instruction and self-study (Burt, 1999). The extensive analysis of videos provides students and teachers with engaging and intellectually stimulating hands-on and minds-on learning experiences that supplement the traditional textbook (Lee, Ginsburg & Preston, 2009). Producing and solving digital video-supported cases promotes the active and contextual aspects of the students' meaningful learning as well as their positive emotional involvement in the learning process (Hakkarainen, Saarelainen & Ruokamo, 2007).

A review of the second/foreign language literature has shown that use of authentic web-delivered video enhanced the incidental acquisition of vocabulary and listening comprehension of ESL adult learners at a major Midwestern university in the USA (Smidt & Hegelheimer, 2004). Video offered L2 learners a chance to improve their ability to understand comprehensible input and allowed teachers to ask both display and referential questions. Video tasks created advanced organizers and other visual representations and descriptors (Canning-Wilson, 2000). When compared with illustrated books, interactive videos used by German secondary school students helped them learn complex content more effectively (Merkt, Weigand, Heier & Schwan, 2011). Videotape recordings of dramas (movies, television programs, and plays) offered Japanese college students a means and an interesting context for developing linguistic knowledge into usable language skills and were effective in helping students gain confidence in using English to ask and answer questions and listen to and comprehend details. Students' attention span and interest also improved (O'Donnell, 1990).

In content area courses such as engineering, medicine, dentistry, pharmacy, chemistry, biology, physics and mathematics, use of online videos proved to be effective as well. For example, medical students who watched video clips were more active in using collaborative eLearning tools and achieved higher course grades (Romanov & Nevgi, 2007). Similarly, third-year medical students, enrolled in a pediatrics clerkship, who learned in a virtual modality with a digital video case, engaged in more critical thinking (Kamin, O'Sullivan, Deterding & Younger, 2003).

To improve the quality of educational resources available outside of the classroom and to foster student engagement with ideas and concepts, Cox (2011) incorporated digital learning elements in organic chemistry and biochemistry courses. He integrated health-related YouTube videos directly into PowerPoint presentations. Likewise, McCormack & Ross (2010) used a collaborative approach to integrate technology with a lab on bacterial transformation. Students viewed websites and created videos to increase their conceptual understanding. In another study, recording and streaming video-linked lectures allowed the students to view them at a later date and provided an additional resource to support student learning (Wang, Mattick & Dunne, 2010).

In colleges of engineering, medicine, dentistry, pharmacy, science, business and computer science where English is used as a medium of instruction and where students are non-native speakers, there is a great need for integrating online videos in class lectures as many freshman students majoring in those areas lack background knowledge and have difficulty following and comprehending class lectures delivered in English in specialized courses such as engineering,

dentistry, pharmacy, physiology, biology, biochemistry, anatomy, physics and others.

Results of a survey with 365 Saudi freshman students majoring in engineering, medicine, dentistry, pharmacy, physics, chemistry, math, and computer science, showed that many freshman students have difficulties comprehending specialized lectures delivered in English, understanding abstract and complex concepts, remembering too many details using unfamiliar technical terms, understanding, visualizing, connecting, recalling, and retaining structures, classifications, definitions, causes, whole-part, processes, descriptions of systems. To help freshman students majoring in those areas overcome those difficulties, supplementary specialized online videos related to the topics covered in their area of specialization can be used.

For the above reasons, the present study aims to show college instructors teaching content courses to EFL Saudi students in English how specialized online videos lectures, video courses, science animations, and presentations can supplement specialized class lectures. Specifically, the present study shows how specialized online videos can be utilized to help freshman students learn, comprehend, retain and apply basic knowledge in specialized courses such as engineering, business, biology, biochemistry, anatomy and physiology. It shows how online videos can be used to fill in gaps in the students' specialized knowledge, develop advanced listening skills and enhance their knowledge of technical terms.

Specialized online videos with a variety of topics, speakers, difficulty levels and lengths can be easily downloaded to the students' laptops or smart phones for free. Students can view those specialized online videos anywhere, anytime and as many times as they need. They can select and specialized videos that match their proficiency level and background knowledge and help them understand abstract and difficult information.

2. Materials and tasks

The course instructor can make a list of useful supplementary specialized online videos related to the topics to be covered in the course. He/she may assign a weekly video or give the students the video URL to view it or download it. Students can also search for videos on their own by enclosing key terms (whether single nouns or compounds) such as *"free market", "introduction to biology"*, *"elements & substances", "respiratory system",* or *"gum diseases"* in quotation marks in the Google or You Tube search box. Specialized videos can be downloaded from Learners TV *(http://www.learnerstv.com/),* a comprehensive website that provides thousands of free downloadable specialized video lectures in different subject fields such as biology, physics, chemistry, medicine, dentistry and nursing. Learners TV provides free video lectures of whole courses delivered by instructors from reputed universities around the world. There are also animations that provide students with fun and innovative ways of learning. Examples of free downloadable specialized videos are:

- *The free market (animation):* http://www.youtube.com/watch?v=9kFNBV6FyyQ
- *Pharmacology*: http://www.youtube.com/results?search_query=pharmacology&oq=farmacology&aq=0s&aqi=g-s10&aql=&gs_l=youtube-psuggest.1.0.0i10l10.217733l235630l0l237718l11l11l0l0l0l0l210l1652l2j8j1l11l0.
- *Gum diseases:* http://www.youtube.com/results?search_query=gum+disease
- *Cell biology:* http://www.youtube.com/results?search_query=cells+biology&oq=%22cells%22&aq=0&aqi=g10&aql=&gs_l=youtube-psuggest.1.0.0l10.16887l19565l0l23005l15l15l0l0l0l0l216l1321l10j3j2l15l0.
- *DNA animation 3D:* http://www.youtube.com/results?search_query=dna+animation+3d&oq=DNA+animation&aq=2&aqi=g3g-m7&aql=&gs_l=youtube.1.2.0l3j0i5l7.135754l139887l0l142445l15l15l1l0l0l0l215l1927l4j9j1l14l0.
- *Hormones:* http://www.youtube.com/results?search_query=hormones&oq=hormones&aq=f&aqi=g10&aql=&gs_l=youtube.12..0l10.30397l32221l0l36047l8l8l0l1l1l0l185l1039l1j6l7l0.
- *Architecture:* http://www.youtube.com/results?search_query=architecture++&oq=architecture++&aq=f&aqi=g10&aql=&gs_l=youtube.12..0l10.6326l6326l0l7922l1l1l0l0l0l0l213l213l2-1l1l0.
- *Programming languages:* http://www.youtube.com/results?search_query=programming+languages+lecture&oq=programming+languages&aq=1&aqi=g7g-m3&aql=&gs_l=youtube.1.1.0l7j0i5l3.42892l46124l0l48402l21l21l0l8l8l1l207l1698l5j6j2l13l0.

- *Atoms and molecules:* http://www.youtube.com/results?search_query=atoms+%26+molecules&oq=atoms+%26+molecules&aq=f&aqi=g1g-C3g-mC1&aql=&gs_l=youtube.12..0j0i33l3j0i5i33.25455l32740l0l34253l14l14l1l0l0l0l201l2002l2j10j1l13l0.
- *Basics of integration:* http://www.youtube.com/results?search_query=integration+basics&oq=integration&aq=3&aqi=g10&aql=&gs_l=youtube.1.3.0l10.66179l68102l0l94038l11l11l0l1l1l0l249l1166l6j3j1l10l0.
- *Introduction to organic chemistry:* http://www.youtube.com/results?search_query=introduction+to+organic+chemistry&oq=introduction+to+organic+chemistry&aq=0&aqi=g3&aql=&gs_l=youtube.1.0.0l3.39747l46059l0l48598l33l33l0l13l13l2l207l2244l9j10j1l20l0.

3. Guidelines for Selecting Specialized Online Videos

Videos selected should be related to the course topics under study. The video length in minutes, content difficulty level, and speed of the speaker should be taken into consideration as well. They should also be based on their capacity for inspiration, motivation, interest, content, clarity of message, pacing, graphics, length of sequence(s), independence of sequence(s), availability and quality of related materials, and potential classroom use (Burt, 1999). The video content should meet the students' interests, knowledge, understanding, abilities, and experiences.

Subtitled and closed-captioned videos should be selected. Two studies by Harji, Woods & Alavi (2010) and Yekta (2010) found that Iranian students who watched videos with subtitles scored significantly higher on the vocabulary tests than those who viewed the videos without subtitles. Subtitled videos also enriched the students' processing and comprehension of the target language. Adding German subtitles to German videos assisted learners in acquiring new vocabulary and developing listening comprehension (Froehlich, 1988). Closed captioned videos provided an effective tool for presenting nanotechnology information in a meaningful way to ESL students (Kumar and Scarola, 2006). They were more effective for performance on aural vocabulary tests, increased students' attention, improved processing, reinforced previous knowledge, analyzed language and served as a crutch for learners (Winke, Gass and Sydorenko, 2010),

Since science videos are often fast-paced, information rich and pose cognitive difficulties, scientific concepts should be fragmented and embedded within larger issues to reduce cognitive issues and enhance students' understanding (Pace & Jones, 2009).

4. Instructional strategy with online videos

Instruction with online videos can proceed in three phases: (i) before watching a video, (ii) while watching a video, and (iii) after watching a video. Each of which is described below.

4.1 Before watching a video

The instructor sets goals for watching videos (goals for the whole course and each topic and video), introduces the video by giving the title and summarizing the content, tells the students what they need to do and focus on, and gives pre-questions to help the students understand the content of the video lecture. The students can watch the video on their own, at home or school, either before or after taking a class lecture. The instructor can serve as a facilitator. His/her guidance is crucial in facilitating use of digital video to improve students' listening comprehension skills, background knowledge and knowledge of specialized technical terms. S(he) encourages and models the skills that the students need to acquire or practice.

4.2 While watching a video

Watching the video should help develop the students' listening comprehension skills of specialized material such as: (i) Listening for main ideas and supporting details; (ii) listening for organizational clues (descriptions, classifications, definitions, processes, whole-part and cause-effects relationships); (iii) deriving meanings of difficult technical terms from the spoken context, through definitions, explanations, illustrations and examples given through the flow of speech; (iv) note-taking skills while listening to class lectures using short hand, abbreviations and key words; (v) connecting

information; and (vi) outlining the content of a lecture by listing the topics and subtopics, main ideas and significant supporting details.

To help the students make the most of specialized videos, they should avoid watching videos passively. Based on findings of a study with second-year undergraduate civil engineering students, Cherrett, Wills, Price, Maynard & Dror (2009) found that interactive videos enhanced the students' learning experience. They concluded that passive observation of a video is not cognitively engaging and challenging, and learning would not be as effective as it should. Therefore, the students should watch interactive videos in which they play an active role. While watching the video, they should be required to engage, participate, respond and be actively involved. They can take notes of main ideas, important details, key technical terms, pay attention to specific information while listening, answer questions while listening or make an outline of the lecture.

In addition, Micro-level activities, such as stopping the video or browsing were found to be more beneficial for learning than features enabling macro-level activities, such as referring to a table of contents or an index (Merkt, Weigand, Heier & Schwan, 2011).

To improve learning outcomes, the instructor must contextualize assignments by making explicit links between content and its use in a workplace setting. Seddon (2008) found that contextualization to be responsible for a deeper style of learning that was adopted by the majority of students. He contextualized assignments by having the students' present their results as a role-play video of a veterinarian/client consultation.

Finally, Canning-Wilson (2000) recommended that video tasks be multi-layered in order to exploit all information and elements contained in the aural and visual texts. Video tasks and lessons should be perceived by the learner as challenging and requiring effort. Students should not be able to answer questions based solely on what they see instead of what they hear.

4.3 After watching the video:

The students can work individually, in pairs or groups, discuss answers to questions, summarize or retell video content orally. They can use mind-maps, diagrams, flow charts or photos to show information details and relationships among concepts and topics. To motivate students to watch online videos, they can keep a log of the videos they have watched. The instructor can give extra credit, include the video content on tests and give written assignments. The assessment strategies selected by the instructor should support and develop students' understanding of the content under study.
During all instructional phases, the instructor should support inquiries while interacting with the students and should encourage all the students to fully participate in learning.

5. Conclusion and recommendations

To help freshman students who are non-native speakers comprehend specialized lectures delivered in English, the present study recommends the integration of specialized online videos in specialized content courses. The students can download digital videos related to the topics to be covered in their courses from Internet websites such as You Tube and Learners T.V. However, watching an online video does not mean that meaningful learning will occur automatically. Karppinen (2005) indicated that learning outcomes depend largely on the way videos are used as part of the overall learning environment, i.e. how viewing or producing videos is integrated into learning resources and tasks. For learning with online videos to be effective and meaningful, it should be (i) active, (ii) constructive and individual, (iii) collaborative and conversational, (iv) contextual, (v) guided, and (vi) emotionally involving and motivating (Karppinen, 2005).

To allow instructors and students' quick and easy access to specialized digital videos on the Internet, the present study recommends that each college create a specialized digital video repository, which integrates MPEG-4 encoding, full text indexing, high-resolution streaming, and Synchronized Multimedia Integration Language (SMIL), for delivering on-line digital video, for enabling content-based search for certain segments of a video clip stored in the repository. This specialized digital video repository will enable students and instructors to store, search and retrieve catalogued streaming of specialized digital video content to be used for instructional purposes. This is believed to enhance teaching and learning in Saudi English-medium colleges.

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