A STRENGTH-WEAKNESS-OPPORTUNITY (SWO) ANALYSIS OF THREE IMPLEMENTATION MODELS FOR INTEGRATING 'THE KNOWLEDGE AGE' INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) INTO SCHOOLS[1]

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Abstract: Information & Communication Technologies (ICTs) have developed tremendously in the last thirty decades. The invention of Personal Computer (PC), the Internet-connecting softwares as well as Android-based smartphones, revolutionized instructional technology employed by school teachers of 1980s. These latest educational technologies, like radio, OHP, TV, and video in the previous eras, have soon been adopted by contemporary learning institutions. Based on how schools integrate the educational technologies emerging in the era called by Trilling & Fadel 'the Knowledge Age' (2009:3) into classrooms, there have been three implementation models: 1) offline learning class; 2) blended learning class; and 3) virtual learning class. A question that has oftentimes been asked is this: "does integrating these latest technologies into classrooms improve instruction quality and learning quality?". This paper answers the question by analyzing strengths, weaknesses, and opportunities that will presumptively exist if schools integrate the latest ICTs into classrooms. It concludes with a proper strategy—namely, integration strategy— deduced out of the SWO analysis that can be best implemented in schools.

Keywords: *Information & Communication Technology (ICT), blended learning, virtual learning, Gen Y, SWOT analysis, 21st Century Skills Movement*

A new generation of learners steals today's show with their peculiar characteristics. Called by many names,—'Gen Yers', 'Millenials', 'the net geners', 'digital natives', 'netizens'—this generation of learners makes up 20 percent of the world's population in 2006 (NAS Recruitment Communications, cited in Reilly 2012:2) and will absolutely grow more in number this year and years to come. This generation needs attending to since they are fully supported by, well-equipped with, fully-lived by, and fully accommodated by the Internet and computer technologies. They have been attending our schools, learning and studying in our learning institutions and have begun to contagiously impact the learning and teaching process by showing their annoying behaviors such as texting during teacher's instruction, quoting their virtual friends' blog posts instead of standard class textbook when asked to explain class lesson, or putting headsets or earphones listening their favorite songs during teacher's explanation. These, among other upsetting attitudes, result from their craze about the latest ICTs and their addiction to social networking and entertainment apps (INSPIRE 2013:9).

Educators beyond number wrote on educating the Gen Yers, which shows how important it is to pay a special attention to pedagogical issues relative to Gen Y's learning style and learning preference. To illustrate, Pletka (2007) writes that a significant number of American youth drop out of high school in part because they feel disengaged in the traditional classroom, where they do not feel comfortable anymore with the way teachers teach them (2007:121). Trilling & Fadel (2009), from whom the term 'the Knowledge Age' in this paper comes, identify eight common attitudes, behaviors, and expectations of the net geners that clearly distinguish them from their parents (Trilling & Fadel 2009:29-30). Skiba (cited in Reilly 2012), a researcher in nursing education, concludes in her study that 'the old way' of schooling, namely the teacher as "sage on the stage," is not effective with Gen Y (Reilly 2012:3). Lastly, a survey carried out by Peter Reilly (2012) with 100 middle school students in Aguascalientes, Mexico, reveals that 71 percent of the students describe their English class as "boring" or "very boring" because while the young people spend significant time in front of the screen at home, public schools in Mexico have limited funds to afford the technology for classrooms (Reilly 2012:3-4).

This paper is written with Gen Y and their children Gen Z in mind, attempting to elaborate as completely as possible on three technology-integration models that can be implemented in any EFL class or school, along with an analysis of their strengths, weaknesses, and opportunities respectively, in the hope that it will give some enlightenment on the best model to apply for Gen Y, Gen Z, and other generational cohorts living

[1] This paper is dedicated to Ms. Selestin Zainuddin for her pivotal endeavor to accommodate Gen Y's learning style with 'Oxford-LIA Project' and her wholehearted efforts in implementing 21st Century Skills scheme at LIA learning institutions all over Indonesia.

in 'the Knowledge Age'. It proceeds with some strategies deduced out of the Strength-Weakness-Opportunity (henceforth, SWO) analysis and it concludes with a suggestion for interested parties trying to implement the best of the three.

Key Terms Defined

Before delving into the main issue, it is necessary to define clearly some key terms used in this paper, namely blended learning class (henceforth, BL class), online learning class or virtual learning class (VL class), and offline learning class (OFL class), and SWOT analysis as well.

BL class is a class that uses blended learning to achieve its learning goals. Thorne (2003) explained that blended learning is learning that, 'like its name suggests, blends online learning with more traditional methods of learning and development.' (Thorne 2003:2). This class favors integration of the innovative and technological advances obtained by online learning with the interaction and participation offered in the best of traditional learning. In other words, blended learning is a mix of multimedia technology, CD ROM video streaming, virtual classrooms, voicemail, email and conference calls, online text animation and video streaming, combined with traditional forms of classroom training and one-to-one coaching (Thorne 2003:16). While blended learning class joins virtual learning and conventional face-to-face learning, VL class prefers online learning alone, using the Internet facilities and features or communication technologies such as computers, mobile phones, smartphones, tablet computers, IPads, and the like. This kind of class is exemplified in a distance course, where all of the learning process takes place fully online and students never need to go to the school or the campus (Lynch 2004: 24-25). OFL class, lastly, is class with traditional face-to-face instruction, where students are required to attend all classroom sessions and do not need to connect to the Internet so as to access teachers' presentations.

According to *Wikipedia*, SWOT analysis is a basic strategic planning method used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or in a business venture so as to make feasible strategies (cited in Chan 2011). SWOT analysis is executed by filling in a four-dimensional matrix (see Table 1). Within its grids are rubrics called 'Strengths', 'Weaknesses', 'Opportunities', and 'Threats'. 'Strengths', in terms of business firm, refer to characteristics of the business or team that give it an advantage over others in the industry, whereas 'Weaknesses' are characteristics that place the firm at a disadvantage relative to others. 'Opportunities' are external chances to make greater sales or profits in the environment, while 'Threats' are external elements in the environment that could cause trouble for the business (Chan 2011:148). SWOT analysis is generally carried out in the following steps. First, analyze business's external environments to find out opportunities and threats a business faces. Second, analyze business's internal factors to find out strengths and weaknesses a business possesses. Third, allocate external opportunities and threats with internal strengths and weaknesses (Chan 2011:148).

In this paper, the SWOT analysis lends itself to being used in terms of three classroom models mentioned above, since it is instrumental in finding strengths, weaknesses, opportunities and threats embodied in the three models. 'Threats' section, however, is an exception; 'Threats' are deliberately omitted since external environments troubling the implementation of the three models are purposefully unattended in this paper. Additionally, SWOT analysis here will only focus on four key elements in implementing the latest educational technologies: school, its students, its teachers, and technology the school makes use of.

Offline Learning (OFL) Class

As explained above, this kind of class adopts a negative stance on the integration of the latest ICTs into itself, and is in favor of the utilization of conventional instructional technology in order to improve EFL learning and teaching quality. School and its stakeholders are always ready to guarantee availability of teaching aids, instructional technology, pre-service as well as in-service trainings for teachers so that teaching and learning process run well, as required by school curriculum. Teachers are always ready to teach students in best manner; they are well-equipped with EFL theories, EFL teaching methodology, EFL teaching approaches, and EFL teaching techniques and strategies to use in their teaching of the four skills (writing, speaking, reading and listening). Students are always with teachers in class, so they can be guided, taught, and given feedbacks with no trouble, and they can effortlessly ask for teachers' assistance when needed. Interaction between student/student and teacher/student takes place face-to-face, so it can avoid misunderstanding. All instructional media and technology of 1980s that include DVDs and their players, CDs and their players, radios, cassettes and their players, TVs, videos, and computer apps completely enable teachers to support and accomplish their teaching. However, school and its stakeholders show their opposition to updating of educational technology through adopting the newest ICTs to be integrated into it, because of which the school does not facilitate the use of ICTs. Also, school overlooks aspirations and needs of Generations Y and Z, who nowadays grow more and more in number and need understanding. Teachers have problem relative to teaching two productive skills in an EFL environment, that is, speaking and writing. During speaking skill practice, for instance, teachers can only have students speak to class teachers and to their classmates, who are all non-native speakers; they lack exposure to

natural model of native speaker's pronunciation, intonation, and stress, which later will impact on students' unfamiliarity when talking to native speakers in person (Alberth 2013:10). In fact, this weakness can be lessened by hiring a native speaker teacher, which sadly exceeds school's budget, since hiring a native speaker teacher costs more than installing WiFi protocol. Additionally, while allocating time to practice writing skills, teachers can only urge students to write to class teachers, to their peers, and to imaginary readers, who are again non-native speaker writers; they have little access to real native speakers' conventions of writing. This weakness can also be reduced by hiring a native speaker teacher, to whom students have to write to, yet school still have to pay more for hiring one than for integrating the latest ICTs. With class teachers and the available printed books as the only source of knowledge in class, students can learn things only from them; any knowledge or information other than those taught cannot be accessed. This means class limits their knowledge. Teaching source and learning source, as a consequent, are limited too. Moreover, because they are exposed to the latest ICTs such as the Internet in an outside-class environment, namely Internet cafes, they are not equipped with some knowledge of how to criticize information, how to critically sort reliable information out of unreliable one, how to organize a diverse array of information for effective learning—survival skills only possibly taught in a learning environment conducive to the use of the Internet (Grigoryan & King 2008:2). As far as teaching of listening skill is concerned, instructional media and technology such as DVDs, CDs, cassettes, radios, TVs, computer apps, do not provide real or authentic listening situations; they are made-up for course purpose. Also, the technology does not place students in a situation where they listen to and immediately react or respond to their interlocutor interactively; the technology only makes students listen as passive listeners. They cannot interact since their interlocutor, namely the real native speaker, does not really exist.

Table 1: a SWOT analysis matrix

Blended Learning (BL) Class

While OFL class has a more favorable response to the utilization of traditional instructional technology to enhance EFL learning and teaching than to the inclusion of the latest ICTs, BL class maintains an attitude of preference for fusing the virtual mode of teaching into traditional offline instruction. In this implementation model, just like the former, school and its stakeholders are always ready to guarantee availability of teaching aids, instructional technology, pre-service as well as in-service trainings for teachers so that teaching and learning process run well, as required by school curriculum. Moreover, this school takes a positive position on adopting the latest ICTs and does virtual class and traditional bricks-and-mortar class justice. Likewise, teachers are always ready to teach students in best manner; they are well-equipped with EFL theories, EFL teaching methodology, EFL teaching approaches, and EFL teaching techniques and strategies to use in their teaching of the four skills (writing, speaking, reading and listening). In addition, they are also trained to make an effective use of the latest ICTs such as the Internet, smartphones, IPads, as well as Android-based tablet computers, and the like for EFL teaching, and best understand psychology of learning of both Generations Y & Z. Students are partly with teachers in class and are partly online. Being both in class and online, they can be guided, taught, and given feedbacks with no trouble, and they can effortlessly ask for teachers' assistance when needed. They are also taught survival skills of 'the Knowledge Age', that is, new literacy skills in criticizing information, critically sorting reliable information out of unreliable one, and organizing a diverse array of information for effective learning as well. Additionally, students' varying learning styles, learning preferences, and learning needs are highly appreciated and seriously attended to, including those of Generations Y & Z. All instructional media and technology of 1980s such as DVDs and their players, CDs and their players, radios, cassettes and their players, TVs, videos, and computer apps are utilized together with the 21st century's ICTs like the Internet, smartphones, IPads, Android-based tablet computers and the like. They are all employed to support and to best accomplish their learning as well as to cater to learning preference of Generations Y & Z. Also, a Learning Management System (LMS) is built to establish sustainability of online learning. However, school and its stakeholders have to spend more money to implement this kind of class since blended learning class typically cost two to three times (and sometimes more) as much as face-to-face instruction or virtual programs do; they have to pay for both face-

to-face instruction by teachers on one side and installation of the Internet devices on the other (Bersin 2004:16). Teachers have two burdening endeavors: preparing both face-to-face instruction materials and virtual class materials, and synthesizing both of them for quality EFL teaching. They do not share as very much freedom to choose learning materials of their interest as those in VL class; they have to receive all knowledge delivered online and offline by teachers with very little autonomy, which may stifles their sense of creativity and decreases their intrinsic motivation. Maintenance of LMS and its troubleshooting may cost a lot of money.

Virtual Learning (VL) Class

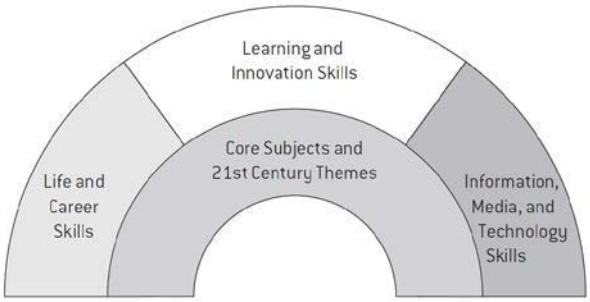
Whereas the two other models take a dislike to a complete integration of the most current ICTs, VL class accords with it. While schools implementing BL class scenario have to spend more money than they think, schools which implement VL class scenario do not get bothered by excessive money problem; they only need financial capital for the Internet, Learning Management System (LMS) management, and at least one resourceful EFL teacher with great mastery of digital literacies and great virtual learning training, that gains a competitive edge with Gens Y's and Z's proficiency. Like both BL model and OFL model, teachers in VL class model are always ready to teach students in best manner; they are well-equipped with EFL theories, EFL teaching methodology, EFL teaching approaches, and EFL teaching techniques and strategies to use in their teaching of the four skills (writing, speaking, reading and listening). In addition, they are also trained to make an effective use of the latest ICTs such as the Internet, smartphones, IPads, as well as Android-based tablet computers, and the like for EFL teaching, and best understand psychology of learning of Generations Y and Z. Moreover, they are well-trained in virtual learning pedagogy and digital literacies. They spearhead all the online teaching, online practice, online activities, and online assessment. Students, however different degree of proficiency of their digital literacies is, are treated as Gen Yers or people with mastery as much as Gen Yers'. Being so, students interact with teachers online; they are taught online, practice what taught online, do activities online, and are assessed online. Further, they gain very much freedom and autonomy to choose sources of learning from an ocean of websites in a planet of Net (Schcolnik, Kol & Abarbanel 2006:16). Also, they can get connected very easily using the latest ICTs they own with people of diverse nations (including English speaking countries), practicing their productive skills as well as receptive ones and exercising their digital literacies for reaching certain learning objectives (Chinnery 2005:15). For both school and teachers, all they need are computers, the Internet, some pieces of electronic apparatus that enables good quality of the Internet connection, software to well maintain LMS, and a good digital camera. As for students, common gadgets are useful such as computers with multimedia facility, IPads, smartphones, tablet computers, a good digital camera, a headset or earphone, a set of speakers, and a microphone. However, schools implementing this VL model do not accommodate and meet aspirations and needs of learners other than Generations Y and Z. To admit to these schools, learners are strongly required to get high level of mastery of digital literacies like the one Gens Y and Z masterfully do, which may hinders learners who do not yet get the new literacies. Due to their new role as spearheads of online teaching, teachers have to prepare all online materials, from a warm-up stage, presentation stage, practice stage, through assessment stage and feedback-giving stage. Further, they have to do researches on various websites, website contents, website features and facilities so as to meet the objective of their teaching. They also have to teach skills of critical use of the Internet so that students can critically make use of the Net information; all of which may burden their job as teachers. Students oftentimes blur their personal use of the Internet and their academic one, which results in 'informality of formal academic things'. For example, they use informal register in their academic essay, which lower the academic nature of the essay (Ancker 2002:5-6). Further, students' online lifestyle may bring about their low level of physical interaction with other people, which stifles their socialization and causes a potential tendency of anti-social behavior. Similarly, maintenance of LMS and its troubleshooting may cost a lot of money.

One Great Opportunity

The three implementation models share similar opportunity; 'opportunities' analysis, therefore, is elaborated here for all the three.

The latest trend that has spread across every corner of the globe is *the 21st Century Skills Movement*'. Begun with the book publication of its inventors, Bernie Trilling & Charles Fadel, in 2009, this movement has been drawing global attention for its promising educational agenda and its ambitious vision for the future education. Its aspiring vision lies on its *the 21st Century Knowledge-and-Skills Rainbow* (see Table 2), which integrates three skills: life and career skills, learning and innovation skills, and information, media, and technology skills (Trilling & Fadel 2009:48).

Table 2: the 21st Century Knowledge-and-Skills Rainbow



Trilling & Fadel (2009) exemplifies how these three skills can be integrated in a collaborative project of making an educational website involving six teenagers of different countries, called 'The SARS Project' (Trilling & Fadel 2006:46), as follows:

> In 2003, six high school students—Kian Huat from Kuala Lumpur, Malaysia; Ming Han from Singapore; Barthe and Jorrit (twins) from Veghel, the Netherlands; Ahmed from Cairo; and Van from Philadelphia—collaborated online to create a site on a topic of great concern at the time—the deadly outbreak of the Severe Acute Respiratory Syndrome, or SARS, virus. The global team of students had to do all the work involved in producing an engaging educational Web site: researching the topic, interviewing experts, writing the text, designing and creating the look and feel of the site (the layout of text, images, illustrations, animations, and videos), and programming the site's interface, navigation, interactive games, and quizzes. The geographic dispersion of the team, and the vastly different time zones they lived in, made the use of online tools to plan, schedule, communicate, and coordinate all of their work essential. We refer to the SARS project often to provide concrete examples of how students develop each of the 21st century skills.

The first set of 21st century skills focuses on critical learning skills and innovation, which ranges from critical thinking and problem solving (expert thinking), communication and collaboration (complex communicating), to creativity and innovation (applied imagination and invention), whereas the second set concentrate on information, media and technology skills, which comprises information literacy, media literacy, and information and communication technology (ICT) literacy. As for the last set of 21st century skills, life and career skills, covering flexibility and adaptability skills, initiative & self-direction skills, social and cross-cultural interaction skills, productivity and accountability skills, and leadership and responsibility skills as well (Trilling & Fadel 2009:47-86).

How all these skills are merged is well-illustrated in the case of the SARS Project. At the outset of their project, the student team was confronted with an immense amount of website information, such as the biology of the SARS virus, the medical reports on the virus's effects on the body, the most effective methods to prevent and treat the disease, the mathematical and epidemiological data on the spread of the disease, and the social and governmental responses to monitoring and controlling the outbreak. They used their critical learning skills and innovation here by critically sorting out all the information, analyzing each of it, interpreting it, evaluating it, summarizing it, synthesizing all the information, and finally applying the results to solve SARS issue (Trilling & Fadel 2009:51). Then, afterwards, the team members used their reasoning skills to present a clear and logical story of how the SARS outbreak started and spread (Trilling & Fadel 2009:53). Further, they solved a number of website design problems in presenting the SARS story effectively, choosing the best methods to communicate their findings to their audience (Trilling & Fadel 2009:53). Additionally, they applied their complex communication skills by exchanging nearly three thousand messages during the project using the latest ICTs, working from four different time zones (Trilling & Fadel 2009:54). They also applied their creativity and innovation skills when discussing their website content and visual design (Trilling & Fadel 2009:56). In short, they used the first set of 21st century skills in this stage. In the second stage, they utilized the second set of 21st century skills. In here, they ensured the web information was credible, accurate, and reliable. They decided which information was most useful and interesting and how to organize and display it to keep their users—students like themselves—engaged (Trilling & Fadel 2009:66). Finally, in the third stage, they made use of the third set of 21st century skills, namely flexibility and adaptability skills, initiative & self-direction skills, social and cross-cultural interaction skills, productivity and accountability skills, and leadership and responsibility skills. Firstly, they used their flexibility and adaptability skills when adapting their different time zones to finish the project. The first member passed text written in one time zone to the second member in the next time zone

for illustration, then on to the third member in the third zone to assemble all the elements into a working web page, and finally to the last member to test, edit, and suggest revisions for the team's next round of work (Trilling & Fadel 2009:76). Additionally, they used both initiative & self-direction skills and social and cross-cultural interaction skills throughout the project process by relying on each other to help solve problems or to find answers to their questions on the Internet. They only asked for their coaches' assistance at the start of the project and occasionally during the course of the project only when they hit particularly tricky technical issues (Trilling & Fadel 2009:78). Lastly, they used their productivity and accountability skills as well as leadership and responsibility skills when they showed their responsibility for a part of the work that needed to be done and being mindful of how that part would be woven into other work done by other team members. Three levels of responsibility and teamwork shown by all members—individual leadership, coordination between team members, and overall team collaboration toward a common vision—were crucial elements that made success of the SARS project possible (Trilling & Fadel 2009:84). The all-integrating force of this skills movement has been interesting interested parties in international setting. Indonesian Ministry of Education, as an illustration, integrated the 21st century skills into its newly-issued curriculum of 2013. It took *the 21st Century Knowledge-and-Skills Rainbow* diagram without any reserve on to its printed handbook on the application of the new curriculum. This latest trend, in summary, proposes a good opportunity for the three implementation models explained above to be applied in any school, especially EFL learning institutions.

One Integration Strategy

Evidently, all the three technology-integration models can develop a proper strategy after the exhaustive internal and external analyses undertaken above. As far as integration of the latest educational technology is concerned, the three models can take advantage of their strengths to fully exploit the newly-developed 21st century skills movement. In other words, all the three can establish themselves as 21st century skills-oriented. By reducing its weaknesses, the traditional face-to-face class (OFL class), by way of illustration, can develop information, media and technology skills, with which students of OFL class make efficient use of the latest ICTs, critically access web learning sources by means of the technologies, and get trained to use multimedia of learning to their fullest educational benefit. Similarly, BL class can develop three skills: information, media and technology skills, critical learning skills and innovation as well as life and career skills. With these three, BL class will foster students' creativity more than it has done beforehand, by giving them more freedom to choose learning sources of interest so that their intrinsic motivation of learning increases. By the same token, the class implementing VL model can also develop two skills to reduce its weaknesses and to exploit its strengths, namely communication and collaboration skills and life and career skills. With these two, students in VL class will grow collaborative and communicative skills so as to lessen their anti-socialization tendency, and will instill in themselves sense of responsibility and of accountability so that they do their learning responsibly within the freedom of choice they have so far enjoyed. Last but by no means least, by reducing all the weaknesses embodied in the three models, it is definitely possible to develop a most promising strategy, namely 'integration' strategy, where all strengths of the three models are combined, then, are integrated into the future education blueprint of 21st century skills movement. With this strategy, learners of Gen Y, Gen Z, and of other cohorts alike will take benefits to the fullest of the latest ICTs mushrooming nowadays.

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