

## CHALK &amp; TALK OR SWIPE &amp; SKYPE?

Ewa KOZŁOWSKA<sup>1</sup>, Rob HOWARD<sup>2</sup>

1. Politechnika Gdańska, Wydział Mechaniczny  
tel.: 503 820 583 e-mail: ewa.kozlowska@pg.edu.pl
2. Online Language Center, EFLtalks, Rio de Janeiro, Brazil  
tel.: 511 333 792 e-mail: rob-howard@outlook.com

**Abstract:** Technology in classroom is a matter of heated discussions in the field of education development, especially when multidisciplinary education goes along with language skills. Engineers' education requires theoretical and practical knowledge. Moreover, dedicated computer skills become crucial for both young graduates and experienced educators on the labor market. Teaching online with or without using different Learning Management Systems (LMS) became an integrated part of teaching and grading systems at most of the universities. Unfortunately, the overuse of technology happens to result in lower learning efficiency instead of bringing development. In this article examples of overuse or misuse of technology in the classroom were discussed and some case study improvements were presented, based on case studies investigated by the representatives of Gdansk University of Technology and Online Language Center.

**Keywords:** e-learning, EFL, interdisciplinary collaboration.

## 1. INTRODUCTION

Rapid technological development in recent years has contributed to numerous changes in many areas of life. Establishing interdisciplinary technologically assisted education brings many benefits, however, it is often associated with numerous misuses, as well as the need for constant improvement, professional development (CPD) and finding an effective way of information transferring. Living in a constant rush makes time become a key aspect, as more and more operations are being done virtually using multiple online tools [1]. Teaching online became an integrated part of teaching and grading systems at most of the universities nowadays and having dedicated computer skills is required at those universities, both from students and teachers [1, 2]. Thus, they have become crucial on the labor market as well. Unfortunately, the overuse of technology can bring in some results that are opposite to the one expected

## 2. TECHNOLOGY OVERUSE

## 2.1. Blackboard, whiteboard or interactive board

Since the invention and utilization of the interactive whiteboard, chalk and talk has been modernized. At first, back in the mid 2000's, educators used the interactive board as a method to avoid writing and rewriting the same information for each class. It quickly outdated the overhead projector and slide projector as a time saving tool [3]. A decade later brought many educational applications that allowed teachers to illustrate, animate, automate and

integrate their class material with technology and university Wiki's and Moodle's made the curation of these materials possible and allowed sharing throughout the educational system [4].

## 2.2. Swipe courses

We continue to embark on a journey towards automation, gamification and technologization as an effective tool for learners, where in reality, it is an inefficient method of delivering content by educators. Gamification can indeed be engaging and entertaining. Some research states that gamified learning 'might' be an effective method, although empirical evidence and research on gamification to date is lacking as to the long-term effects of learning outcome and retention versus engagement in the gamified activities [5]. This brings us to today were gap-fill exercises are now swiped, replacing tactile writing with new forms of haptics [4, 6-7]. Figure 1 shows a gap-fill exercise with some phrases taken out of context, while swipe exercise shown in figure 2 can be solved based on guessing and does not improve to the vocabulary range [7].

- 1 looking at another person (paragraph 1) —
- 2 upsetting or embarrassing someone by being rude or tactless (1) —
- 3 not be caught or punished when you have done something wrong (3) —
- 4 pretend something is true in order to deceive people (3) —

Fig. 1. Example gap-fill exercise with phrases taken out of context

Added to this, the fact that the majority of students are now note taking through snapshots, voice recordings and note taking by typing on laptops and we are noticing the lack of synaptic consolidation transferring information from short term to long term memory. Many studies worldwide have now proven that low-tech methodologies, such as pen and paper, are 30-40% more effective in consolidation to long term memory [4, 8].

The fear is that by transforming practice and exercise fulfillment in education into 'more attractive' and sophisticated haptic experiences, those involving multisensory stimulation delivered in rapid succession, will result in students retaining less information within the

shorter time period spent on consolidation and reflection. The stigma of the word *practice*, *repetition* and *drilling* have become poorly perceived by learners and educators alike, which will undoubtedly also reduce consolidation to long term memory [4, 8-9].

Which of these words apply to good communicators and which apply to bad communicators?

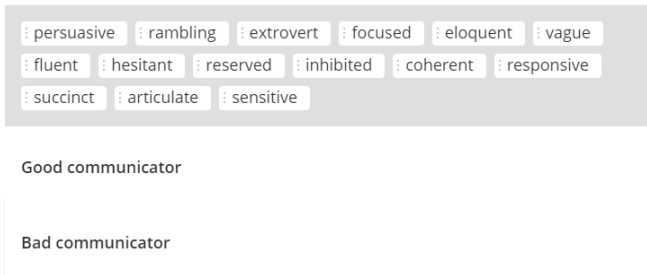


Fig. 2. Example inefficient swipe exercise

### 2.3. Communication issues

Communication procedures between class or group project participants should be clearly defined before starting the work. Let us imagine a situation when member A uses only e-mails to get in touch with member B, who checks his mailbox only once a week but keeps phone-calling member C to get information about the progress, which C does not have because he is not on A's mailing list. One is an early bird, while all the others are night owls, so the first one is forced to wait for hours before he gets any feedback on his morning work, while others always get angry when forced to join a Skype conversation at 6 o'clock or answer an early morning call. Moreover, one participant uses a specialized computer program that is not compatible with any of others' operation systems.

Even worse, when a discussion that is important to the whole group is conducted between individual members using various platforms and message tools at various times. Once they might be communicating via Facebook Messenger or WhatsApp, at another writing SMS messages or emails (with or without the proper use of a 'reply to all' button or using it only sporadically), and then again, they might be communicating via group chat or video conferencing.

The multitude of electronic channels of communication can later cause problems with retrieving or referring to important data. This does not facilitate collaboration but rather causes disorder, which leads to frustrations [1, 6]. In case of group projects, the most convenient way of exchanging files, information and opinion should be chosen at the very beginning and modified by mutual agreement if needed.

## 3. TECHNOLOGY MISUSE

### 3.1. Classes with no interaction

Setting up a computer laboratory without blackboard or white board, or without a projector or a computer for the teacher to use to present information to the class is an observed example of improper design implementation. Giving students access to technology tools during a group/teacher session while the teacher has none seems a waste of the groups time. An asynchronous approach with technology would be more affective. Classes void of interaction between the teacher and students, both verbal and

visual, have been observed and their purpose remains unexplained [6, 9].

Computer laboratories used as a library make no improvement in the field of technology assisted education because there is no interaction between the users. Moreover, it forces the students to do tasks in a place mostly much less comfortable than home or regular library, at a time of a day that may or may not be creative or productive for them for no reason.

None-interactive tasks can be easily done outside of the classroom and the time could be spent on pre-discussing the problem, possible solutions, information and software needed and then presenting the results [2, 4].

### 3.2. Quizzes and TED Talks in a classroom

Watching a movie or a talk became a common practice that seemingly makes classes more interesting. Same, taking quizzes by the whole group, one by one, using one screen during the class without even explaining the right answers.

Activities like those could be easily done as homework and the results could be discussed in the classroom.

Apart from technical aspects, watching a talk during class is a waste of time that could be spent on discussion or pronunciation practices [4, 10-12].

## 4. MOODLE

Although Moodle serves well as a Learning Management System (LMS) at many universities, using it during classes seems to cause more distraction than learning. Setting up the computer, finding the right course and task always causes more technical problems than expected. Using Moodle on a small TV screen during classes has been observed and criticized. It results in less interaction and hurts students, who are too shy to admit that they cannot see from the back of the classroom. It does not give enough time to follow the action on the screen and make notes at the same time, which makes students rely only on their memory [4]. However, Moodle activities can significantly improve learning outside the classroom [10-12].

### 4.1. Learning Rooms

The e-learning team of the Foreign Language Center of Gdansk University of Technology (CJO) has been creating e-learning materials in the field of technical and business English since 2014. They are available on the Moodle platform in the form of various types of exercises [11].

The materials are divided into separate Learning Rooms according to the topics they cover. Thematic blocks of: architecture, biomedical engineering, mechanical and medical engineering, chemistry, civil engineering, computer science, electrical engineering and automation, electronics, management, mechanics, physics, shipbuilding and telecommunications, and also grammar exercises of specialist language are addressed to people at various language proficiency levels [11].

These exercises are used for independent improvement of English language skills and professional terms make traditional classes more attractive. Many of them contain links to additional lectures posted on the Internet, that students can watch at home and discuss about them afterwards on a dedicated Moodle forum.

The Autodesk Authorized Academic Partner of Gdansk University of Technology (AAP PG) had been using a self-designed e-learning platform TeleCAD to teach AutoCAD

from 2000 to 2002 and trained almost a thousand students during those 2 years [13, 14].

In 2003 TeleCAD was replaced with Moodle. Students have been provided with Autodesk courses of different levels and specializations ever since. By creating *Learning Rooms* - separate learning environments within one Moodle platform, students can get trained in software most applicable in their field of study and future work [1, 13-15].

Learning Rooms can also be used by Autodesk Instructors as a discussion and course preparation environment. Once, a special Learning Room was created in order to discuss different aspects of technical and cultural conditions that must be met for the purpose of preparing an online Autodesk course for a group of Indian students. It still serves other instructors as a base when comes to another international course designing process [16].

Moodle Learning Rooms are also used by scientific circles as a password-protected material repository, backup and so as a discussion and consultation environment [1, 10].

#### 4.2. Homework, discussion and review tool

Uploading quizzes, articles or talks on Moodle platform or connected quiz application, like Kahoot or Quiz Creator works out well when used as a homework or review task before the final exam.

| Ochrona radiologiczna |  |
|-----------------------|--|
| Tematyka              |  |
|                       | Forum aktualności  |
| 1                     | <b>Promieniowanie jonizujące w medycynie</b><br>Promieniowanie jonizujące - ochrona radiologiczna, zastosowanie  |
| 2                     | <b>Skutki promieniowania</b><br>Choroby popromienne<br>Biologiczne skutki promieniowania jonizującego  |
| 3                     | <b>Ochrona radiologiczna - informacje ogólne</b><br>System ochrony radiologicznej  |
| 4                     | <b>Przepisy dotyczące ochrony radiologicznej</b><br>Prawo atomowe - wersja 2016-06-08<br>Prawo atomowe<br>ROZPORZĄDZENIE RADY MINISTRÓW z dnia 18 stycznia 2005 r. |
| 5                     | <b>Materiały dodatkowe</b><br>Państwowa Agencja Atomistyki<br>Stowarzyszenie Inspektorów Ochrony Radiologicznej<br>Krajowe Centrum Ochrony Radiologicznej          |

Fig. 4. Learning Room about radiation protection (in Polish)

Teacher decides whether a particular activity is required or additional. In order to encourage students to be more active or interested in a subject a group activity or an obligatory post on the discussion forum can be added to the list of requirements. Students can work on particular tasks or read uploaded material when they feel focused and awake

enough, in a place with no distractions and no pressure from colleges, who work faster or slower in the classroom. Using e-learning materials by themselves they can review the quiz and analyze mistakes they made, pause the video or go back to the key part of the talk in order to take notes at any time and thus, find their own way of learning effectively [1, 4, 9].

Thanks to the activity report provided by Moodle, students' activity and punctuality is automatically saved and available for a teacher to check at any time if needed.

Figure 4 shows a Learning Room preparing students for practical radiology classes. Practical classes conducted under dangerous conditions, such as radiation, are always preceded by a lecture and radiological protection course, although, basic and additional materials about radiation protection available on Moodle help students review the material before each practical class and this way increase their confidence and sense of security [1].

## 5. INTERDISCIPLINARY ONLINE COLLABORATION

Establishing an efficient online collaboration environment, is extremely useful in the case of international interdisciplinary collaboration. Differences in terminology, professional and cultural habits or time zone make regular cooperation even more difficult [1, 6, 10].

Conducting online consultations enables working on a project without constant need for travelling or buying new software. For the purpose of achieving valid interdisciplinary e-collaboration results some aspects must be discussed beforehand.

First, one needs to determine what programs are to be used, the deadlines for each stage of work and the communication procedures between participants. Necessary improvements may be implemented only if presented to each and every member of the project group and generally accepted.

It should also be clearly defined, how often the email box should be checked, what time of the day and day of the week is usually convenient for live sessions (when comes to international collaboration time zone differences should be taken into consideration), how often a progress report is to be submitted, what kind of software is going to be used and what types of files are compatible with everybody to share and work on. Roles and tasks should be allocated to the members in accordance with their particular skills, competences and availability. All in order to maintain the appropriate pace of work [1, 6, 10].

## 6. CONCLUSIONS

Until we find effective and efficient ways to help learners retain through technology, we should be cautious in the use of technology just for the sake of calling it technology [4].

In order to achieve good and effective technology implementation in a classroom or an online course, communication procedures should be clearly defined beforehand, roles and tasks should be allocated to the members in accordance with their particular skills, needs, competences and availability. Software should be compatible with all the users and not overwhelming to them [1, 4].

According to the idea of the SAMR model developed by dr Ruben Puentedura, learning can be extended through

the use of technology only if it is provided with appropriate reflection and critical thinking. SAMR model includes four levels of technology integration - substitution, augmentation, modification, and redefinition. Though, it provides a framework to support educators and instructional designers in creating optimal learning experiences using technology (especially mobile devices) in education. It was said that technology provides a digital medium for learning to take place, which may enhance and personalize learning, but it is not necessary carry out the learning task [17].

Keeping the balance between traditional and modern teaching can bring in higher learning results. Dedicated computer and mobile skills are crucial on the labor market. The variety of available tools allows many adaptations of the working area for the needs of different projects in diverse disciplines. Using proper e-collaboration tools also makes interdisciplinary and international work easier, faster, safer and much more efficient [1-4, 8-9].

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## KREDA I WYKŁAD CZY PRZESUWANIE EKRANU I SKYPE?

Wykorzystanie technologii w nauczaniu to kwestia wywołująca dyskusje w tematyce rozwoju edukacji, zwłaszcza że edukacja wyższa, coraz częściej multidyscyplinarna, jest ściśle powiązana z umiejętnościami językowymi. Edukacja inżynierów wymaga wiedzy teoretycznej i praktycznej. Ponadto, posiadanie podstawowych, a często też specjalistycznych, umiejętności komputerowych stało się niezbędne na rynku pracy, zarówno dla młodych absolwentów, jak i doświadczonych nauczycieli i specjalistów, niezależnie od branży. Nauczanie online z wykorzystaniem poszczególnych platform powstałych w celu zarządzania nauczaniem (ang. LMS – Learning Management System) lub innych e-narzędzi stało się integralną częścią systemów nauczania i oceniania na większości uniwersytetów. Niestety, nadużywanie technologii skutkuje niższą efektywnością uczenia się, choć docelowo ucyfrowienie edukacji miało przyspieszyć rozwój wielu kompetencji jednocześnie. W niniejszym artykule zostały omówione przykłady nadużywania lub niewłaściwego wykorzystywania technologii w klasie. Zostały też zaproponowane sposoby na polepszenie stanu rzeczy, opracowane na podstawie analizy przypadków z różnych kręgów regionalnych i kulturowych, przeprowadzonej przez przedstawicieli Politechniki Gdańskiej i Online Language Center.

**Słowa kluczowe:** e-learning, EFL, współpraca interdyscyplinarna.