

INTEGRATION OF TECHNOLOGY IN THE EDUCATION SYSTEM

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

In a world where technology is becoming more entwined in every aspect of our daily lives, there have been many ways that it has been used to assist teaching. There are countless benefits to this, especially in the age of the SARS-CoV-2 virus, however there are also potential drawbacks that need to be weighed when assessing the usefulness of this technology in certain settings. Every student is different, and therefore the setting and style of teaching that will be the most effective differs from student to student. One of the great challenges of teachers is to find a style of teaching that reaches and assists all of their students in the learning process. This is particularly difficult when teaching students with incredibly different perspectives and backgrounds.

One particular demographic that is often overlooked is English Language Learners, or ELLs for short. In the United States, ELLs make up a significant percentage of students. In 2015, there were 4.8 million students that identified as English Language Learners in the United States, coming from over 400 different language backgrounds (NCES, n.d.). This presents an interesting problem since many teachers in the U.S. are not equipped with the skills or training to teach students that do not speak English. These students are often placed in language assistance programs to learn both English and other subjects simultaneously. Situations such as these can be overwhelming for teachers and students alike, and technology has played an important role here throughout history.

English is not only a necessary language to learn in the United States, but also internationally. English is the official language of science, business, and international communication, and is spoken and used widely throughout the world. Therefore, it is important

for students of all nationalities and geographic origins to learn English in order to increase their chances of success in finding a job and further advancing society. In this research paper I will discuss the importance of the English language internationally and the role of technology in teaching English to non speakers. I have researched the challenges of teaching another language and teaching non-lingual subjects in a multilingual classroom, and I will present the different techniques and technologies used throughout history. I hope to deliver insight on the progress we have made in spreading knowledge through technology and the challenges that remain difficult to overcome.

Part I: A History of Multilingual Education in the United States

Before the United States was officially founded, America was under the power of Great Britain. When they broke off to form their own nation in 1776, a large portion of the population was made up of migrants from Great Britain and therefore spoke English. The rest of the country consisted of slaves and indigenous people, carrying many different languages and cultures with them. Throughout U.S. history, large numbers of indigenous people were killed off or driven west and isolated from the rest of the country. The majority of enslaved people in America at the time came from the west coast of Africa, and brought over hybrids of their own native languages combined with other European languages that were picked up from colonization and trading. These hybrid languages that were spoken between enslaved people were known as Creole languages, and were mainly different combinations of Dutch, Portuguese, Spanish, French, and English (NPS Ethnography, 1999). The majority of these languages are no longer spoken today due to the nature of their existence and the fact that slaves were not entitled to a formal education in the early United States.

To say the least, citizens of the early United States were not very tolerant of other cultures and ideals. Due to the fact that only the English-speaking citizens were allowed to receive an education, there was no need for teachers to accommodate students of different language backgrounds. This need didn't arise until the mid to late 19th century, when there was a huge influx of immigrants moving into the United States.

First Great Wave of Immigration

During the era of industrialization, many immigrants from Europe were drawn to the United States. Industrialization created many new jobs, and the rise of cities caused an expansion of land and population. From the 1880s to the early 1920s, over 23 million immigrants moved to the United States. The majority of these people were from eastern, southern, and central Europe, and were made up of mostly Italians and Jews (Foner, 2019). Because of the nature of the manufacturing jobs that attracted the majority of these immigrants, higher education was not a priority. The primary method of education at the time was through family. Families moved together and spoke the same language, so this was the easier and less taxing method. On top of that, the general population had a mostly negative view of immigrants, so assimilation was seen as the most popular strategy for success in education.

In this context, assimilation was essentially forced adoption of language and culture. No additional teachers or resources were expended to assist immigrants, they were simply thrown into the environment and expected to adapt. Rather than take resources away from the English-speaking students, immigrants were forced to learn English on their own. It was believed that the success of an immigrant hinged on their English proficiency and willingness to adapt to American culture and society (Rong & Preissle, 2009). Exposure to English speakers was the main way that immigrants learned the language. Technologies to assist this were scarce

at the time, but the one that has stood out throughout history is books and written records. As Yuval Noah Harari says in his book, “Sapiens: A Brief History of Humankind” (2011), “Writing was born as the maidservant of human consciousness, but is increasingly becoming its master.” The importance of writing has been essential to passing on knowledge throughout human history, and still is to this day. With the ability to read it is possible to learn almost anything that has ever been recorded.

Second Great Wave of Immigration

During the two World Wars, country-by-country quotas were established limiting immigration, so there was not a large number of foreigners migrating to the United States at this time. Immigration did not pick up again until the mid 20th century when the 1952 McCarran-Walter Act and the 1965 Immigration Act were passed, eliminating the quotas previously established. This wave of immigrants, which continues to this day, is made up overwhelmingly of people from Latin America, Asia, and the Caribbean. In 2016, nearly 44 million people born in a foreign country were residing in the United States, a number much larger than the 13.5 million foreign born recorded in 1910 although the percentage of the total population is actually lower in 2016 than it was in 1910 (Foner, 2019).

In the second great wave of immigration, people treated immigrants somewhat better than they had previously and there was increased recognition of their importance and contributions. This directly impacted the attitudes of educators, resources put into education, and policies regarding education. Strict assimilation faded away as it was found to alienate and make it more difficult for immigrants to adapt. As a result of a 1982 Plyler vs Doe Supreme Court ruling, every child has the right to a K-12 education regardless of their legal status or that of their parents (Romero, 2012). Pluralism became the new model for immigrant incorporation.

Pluralism highlights a heterogeneous society through accommodation without assimilation, selective, segmented, or pluralistic assimilation, instead of the homogeneous society that immigrants were told to conform to through strict assimilation (Rubinstein-Avila, 2017). It became more common for schools to have special classes for English Language Learners so that they can collectively learn English and other subjects at the same time, without holding back a classroom full of fluent English speakers. Due to the nature of immigration in the 20th century, many immigrants came from similar backgrounds and cultures, making adjustment easier in groups. Pluralism is generally much more successful when students are more engaged in a group, because having other students to learn with and bond can be a motivating factor (Giselbrecht, 2009).

Part II: Modern Technologies Used in Multilingual Education

The rise of pluralism and collective education led to the development and use of many new technologies to assist teachers. As of 2014, one out of every four children in the United States is an immigrant or the U.S.-born child of immigrants, with ten percent of all students classified as English learners (Tamer, 2014). When teaching English Language Learners, the teacher is ideally able to speak the same language as the students, however this is not always possible with the resources available. On top of this, many schools in the U.S. have students who have different first languages. This presents a situation where either a multilingual teacher is needed, or some sort of technology to assist the students and teachers with communication.

Translation

One such technology that is helpful in aiding communication between teachers and students is translation technology. Translation is the conversion of a word or phrase from one language to another. Applications such as Google Translate and iTranslate are examples of

translation technology. With these applications the user is able to enter a word or phrase by typing or speaking, select the input language and the language to translate to, and read or play a voice speaking the translated word or phrase. This technology is simple to use and can be incredibly helpful in communicating with someone who speaks another language.

In a multilingual classroom translation can be used by teachers to communicate words and concepts to students. For example, a math teacher could teach as they normally would in English and, through the use of translation technology, could then convey the same lesson in the language(s) that the students understand. The same technology could be used by students to convey to the teacher what concepts they are comprehending or what they may need additional help with. In addition to facilitating communication between parties, translation technology can be helpful in learning English. If an English learner is unsure of an English word or phrase, they can type or speak into the translation app and are able to see and hear the translation. This would not be a suitable way to learn an entire language but could be useful in assisting the process.

Although this technology can be very useful in numerous situations, there are also some downsides to using it in the context of a classroom. Most glaringly, not every translation is perfect. Due to the nuances of language, some words simply do not have a word of the exact same meaning in another language. Furthermore, the application cannot be perfect and often requires a greater context than what is given to provide the correct translation. For example, the word “mean” entered into a translation app could produce the translation of the word meaning the intention to convey, the word describing a mathematical average, or the word meaning unkind. Imperfections such as these and the fact that the utility of this technology can be time consuming make it potentially unfit for use in certain situations.

Speech Recognition

Another technology that can be used to learn English and is even used in some translation software is speech recognition. Speech recognition technology is able to detect speech and assess the speaker's pronunciation, grammar, and diction. Translation applications sometimes use this as a form of input to detect the word or phrase to be translated. In other contexts, it is used by language teachers and students to assist in improving their spoken intelligibility, comprehensibility, and pronunciation (Altavilla, 2020). In a school setting, this can also be helpful to English learners because it allows them to practice their English in a private environment without fear of being judged or bullied by native speakers.

However, there is evidence that some of these programs have issues with accurately identifying the pronunciation of non-native English speakers (Ashwell & Elam, 2017). It is important to understand that these technologies are not perfect and they may not respond in the intended ways. This can affect feedback to speakers of nonstandard language varieties and even different dialects or varieties of English, such as American, British, or Australian. For example, if a speech recognition software was developed in Australia by Australian developers, it would likely not be suitable for users in the United States or United Kingdom. There is inherent bias and assumptions made by designers of the software that can make different dialects register as errors, making it difficult to receive accurate feedback and identify areas of improvement (Altavilla, 2020).

Human Interaction

Although human interaction is not a technology per se, many technologies are used to facilitate human interaction without being face to face. This is especially true during the pandemic, and is surprisingly vital in the development of language skills. Everyday authentic

social interaction with English-proficient peers has been shown to be one of the most effective ways to improve comprehension of complex ideas and fluency in the English language (Walqui & van Lier, 2010). This holds true whether the conversation is in person or via technology. Many technologies exist for conversing, however some are better than others in providing conversations that can improve language skills. Group video conferences, phone calls, and text messages are some examples and each achieves different goals. Video conferencing applications such as Zoom and Google Hangouts are great for simulating face to face conversations, and can be done one on one or with a group. These technologies allow for almost everything an in person interaction could with the exception of touch, although it can be more difficult to spark an authentic conversation through such a platform. Asynchronous forms of communication such as text messaging have also been shown to help young adult English Language Learners to develop English skills, but is best in combination with real time interactions and course content (McSweeney, 2017).

Part III: English Outside of the United States

Being the official language of the United States, English is enormously important for the success of U.S. residents. However, English proficiency is also a useful tool in advancement and higher education outside of the U.S. English is the official language of science, business, and international communication around the world, so anyone looking to go into these fields should know English. Many countries have recognized this and put in place policies to help their citizens achieve English proficiency with the use of technology.

Malaysia

One key measurement of the workforce, community, and economy in a country is the graduate employability, or GE. The GE is the set of skills, understandings, and personal

attributes that makes graduates more likely to gain employment and be successful in their chosen occupations (Zainuddin, Pillai, Dumanig, & Phillip, 2019). GE is also used to rank Higher Education Institutions all over the world. In Malaysia, the National Higher Education Strategic Plan was launched in 2007 with the goal of improving GE by helping teachers to effectively prepare students for the workforce and meet the needs of the country's economy (Zainuddin, Pillai, Dumanig, & Phillip, 2019).

One of the major hindrances for graduates to gain employment in Malaysia is the lack of English language skills. Many surveys have been conducted that have cited a poor command of English, lack of communication skills, and lack of English proficiency are some of the top reasons that graduates are not hired (Malaysian Employers Federation, 2016). This connection has further led to new policies introduced in Malaysia to help combat low English proficiency and employment, one of which is the English Language Roadmap (English Language Standards and Quality Council, 2015). This particular policy is a ten year roadmap that is designed to set standardized targets for each level of education to be achieved by 2025, hoping for students to leave higher education equipped with the level of English proficiency that is expected by employers. Studies were conducted to assess the current English proficiency level of both students and teachers at all education levels, and the results were worryingly low. By enacting new policies to include more classroom engagement and English learner activities, Malaysia is attempting to combat this trend (Zainuddin, Pillai, Dumanig, & Phillip, 2019).

Conclusion

Technology has been ingrained in every part of our lives, but some technologies are better for achieving certain things than others. It is clear that English proficiency can be a useful

skill to have no matter where you are on the globe, but particularly important for success in the United States. Many companies have made and continue to develop tools to assist in learning English and making it easier to learn other subjects as a non-native English speaker. It is important to keep in mind that a technology that is well-designed for use by English speakers isn't always a good fit for English Language Learners. There are inherent biases and imperfections built into technologies by the developers due to assumptions and nuances of language. When used in the right context, technology can be instrumental in both teaching and learning, and during the pandemic it has become necessary. The technologies and considerations I have outlined can assist teachers and English learners to make more informed decisions about what technology they use and what it can provide for them in a certain context.

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