English in Indonesia and Industry 4.0

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Abstract

This article looks at the status and use of English in Indonesia, a country which is known for its diversity, bio-diversity and diversities of language and culture. The main pathway for learning English in Indonesia is the formal education system. This is enormous, catering for tens of millions of pupils, and has been built up from practically zero immediately after independence. As such the education system faces unique challenges. However, one new challenge is emerging and likely to play a significant part in Indonesia's development over the next few decades. This is the disruptive power of Industry 4.0. Industry 4.0 refers to the emerging technological advances that will have an impact on our society and culture. The role played by English will surely be part of the way forward for building an advanced economy in Indonesia by 2045. The article thus covers how we might respond to and prepare for Industry 4.0 in the education sector, with particular reference to English.

English in Indonesia

English is a global language. This reflects its present day widespread use across multiple functions and its international reach. There are presently around 400 million speakers of English as a first language and 1.1 billion as a second language (Crystal, 2003). This was not always so; around the time of the Domesday book (1086), a survey commissioned by William the Conqueror, there were only around 2 million people (Hinde, 2003). The language at that time was Old English. Global status for English did not come about because of some executive decision on the status of English; it is a reflection of the political, military, economic and cultural power of the people who spoke it, a power that today faces new challenges (Crystal, 2003).

English spread and came to be spoken in many countries, in particular those which were under English colonial rule. In the process, different recognizable

varieties of Englishe emerged; eg Singapore English, Australian English. One important model of these various Englishes distinguishes three types: inner circle countries, outer circle countries and expanding circle countries (Kachru, 1983). The Kachru model is based on the distinction between native speaker users of English and non-native speakers; and also between countries whether English has formal status or not. That would make Indonesia an expanding circle country as there are few native speakers and the language does not have official status in public life.

English in Indonesia exists in a multilingual and multi-cultural setting that is unique and which differs from neighbouring countries in Southeast Asia. The language situation is uniquely diverse. Apart from Indonesian, the national language, there are over 700 indigenous regional languages (*bahasa daerah*). These are found in a geospatial jigsaw of language areas across the archipelago. After these, there are also a number of modern foreign languages which are important, among which English has a special status as the first foreign language.

There are over 20 million native speakers of Indonesian (Simons and Fennig, 2018), but not everyone in Indonesia speaks Indonesian as a first language. There are still many people in Indonesia whose first language is a regional language such as Javanese, Sundanese, Balinese and so on. For them, Indonesian is a second language. When these people use Indonesian, they can be identified as non-native speakers. In particular, their accent provides a clue to where they are from. However, in cities, and among the younger generation, more and more people are speaking Indonesian. Meanwhile, the larger regional languages with populations of speakers above a million, such as Javanese continue to be used in specific settings, and are maintaining their existence. The smaller indigenous languages, however, are under pressure with their speakers shifting from the regional language to a larger language, such as Indonesian, local lingua franca Malays or neighbouring regional languages and many of these small regional languages are finding that less and less people are using the language, a process that if not reversed will lead to the loss of that language, or language death (Crystal, 2014).

The history of English education in Indonesia can be traced back to the colonial period. In the 1920s and 1930s, English as a foreign language was taught,

but only in a few schools for the children of the elites; the main foreign language taught was Dutch. World War II, the invasion of the Japanese, and the fight for independence played havoc on normal life. Education was impacted. After independence, a new education system had to be created from scratch, and English, rather than Dutch, was chosen to be the first foreign language. English is not and is not likely to be an official language in Indonesia, but it is important enough to be a compulsory subject in the national curriculum. The size of the primary and secondary education system is extremely large with 50 million children attending school (Kementerian Pendidikan dan Kebudayaan, 2017). In school, they get lessons for Indonesian and also for English. It is very important that the state education system can develop to help the majority of children to achieve good results with their study of English.

Unlike varieties of English such as Singaporean English or Indian English, there is no uniquely identifiable Indonesian English. This is due to a number of factors. Firstly, there are few native speakers of English for the vast majority of Indonesians to talk with so input must come from a wide variety of media. As such, Indonesians hear American English, British English, Australian English and must be influenced by these various types of English and also others. Secondly, the majority of teachers of English in Indonesia are also learners. Third, the accents of Indonesian speakers may exhibit great variation, influenced by not just Indonesian but the many regional languages. There are many learner-speakers whose accent derives from their first language being one of the regional languages. For example, there are Javanese speakers, Sundanese speakers, Balinese speakers, Batak speakers and so on. These and other factors produce a wide variety of Englishes in Indonesia with no identifiable single standard or description.

We move now to cultural and social aspects of English in Indonesia. About twenty years ago, the use of Englsh in Indonesia was met by some commentators as a kind of threat to the national language and identity. One way such views became known was a kind of obsession with the idea that loan words in Indonesian would somehow damage the integrity of the language, through the increasing number of loan words, in particular those from English. This ran in parallel with the fear by some that Indonesia would be subjected to unwanted cultural phenomena. However, this kind of xenophobic viewpoint is no longer an issue. The

reality is that loan words from English and other languages only make up 5% of the total vocabulary, and this is far less than the case for English which has been borrowing words for millenia. Regarding cultural influences in Indonesia, the archipelagic maritime nation has shifted back and forth between openness and closedness to foreign culture. Today, Indonesia is not only an adopter of foreign cultures. It is an adaptor, taking foreign culture selectively and then adapting it to local cultural norms. Examples are celebration of people's birthday, and the popularity of coffee shops. Neither of these are indigenous cultures, but have been adopted with many local influences transforming the foreign into the familiar.

English education

The formal education sector in Indonesia consists of the state system (*sekolah negeri*) and private schools (*sekolah swasta*). The teachers in these schools are all non-native speakers. The vast majority of pupils will go to either of these, with the rest going to Islamic boarding schools. Apart from these schools, there are also a number of private language teaching schools. These offer a range of courses of general English and also special courses for business, education, or other contexts in society. Some of these schools, in particular those in larger cities, have native speaker teachers but there are also schools where there are only Indonesian teachers. However, the number of Indonesians who have access to these schools is insignificant when compared with the 50 million children who go to school each day. The vast majority of learners of English are learning it as a foreign language in the formal education system as part of the state curriculum from middle school to high school.

Learning English is for most Indonesians learning a foreign language. Learning a foreign language is quite different to the acquisition of one's first language. First language acquisition proceeds without teaching while second language learning requires a conscious effort and some kind of input. There are two ways to learn a foreign or second language, to take classes or to try and learn independently (autonomously). The success of either of these depends on a number of variables. For example we distinguish where you are learning (in England vs elsewhere) and we know that language learning takes a long time.

We look now at some aspects of English being taught in the formal education system. English is optional in primary school but compulsory in junior and

senior high school. This is good, but because the curriculum is relatively 'packed' with a relatively large number of compulsory subjects, English can only get 4 hours a week. Some private schools have extra English lessons as an incentive. In that case, the students study English as an extracurricular activity, and go home later.

The communicative ability of the teachers varies considerably. There is relatively little use of internationally recognized tests of English, such as IELTS or TOEFL so our understanding of the actual picture of accomplishment is still incomplete. Those attending post-graduate programs in education are often motivated to improve their English and the view that it is important to know English and be able to use it is widespread.

In terms of pedagogy, materials and methods, teaching methods are still relatively uninformed by many of the innovations in language teaching methodology for English which have emerged over the last 50 years. This is because the publications that deal with these things are probably unknown to the majority of teachers and teacher trainers. The concept of 'communicative' teaching in Indonesia carries a general meaning and does not evoke for most teachers specific concepts such as information gap.

New technologies are emerging however that will hold the potential for teachers to widen their options when selecting materials for classroom use, as long as the curriculum and the exam system allow teachers the option. Teachers are enthusiastic when it comes to online language learning applications and information repositories. However, it is early days for these and it is a mistake to think that these new tools on their own should replace our present knowledge of the role of methods and materials in language teaching.

The size of the formal education sector is related to the size of its population in Indonesia. Some numbers will help one to grasp its sheer size. The number of schools, teachers, and students at the different levels is immense. Only two other countries in the world have more, China and the US. In the period (2017/2018), the number of schools both state and private was 307,655. There were 50,034,518 primary and junior and senior secondary pupils. There were 10,975,738 new pupils. There were 3,027,422 teachers. These teachers worked in 1,778,977 classrooms. The number of graduating pupils per year was 10,057,142. In addition, 425,590 pupils

repeated a level and 188,350 gave up school, about 2% of yearly graudates (Kementerian Pendidikan dan Kebudayaan, 2017).

How many English teachers are there? So far, this number is not easily available so we don't know the numbers of teachers of English in state and private schools. An informed guess is that it would be about 5% of the approximately 3 million total of all teachers. That would be about 150,000 teachers of English. We can also guess that there are on average two English teachers per school. That would mean that each teacher would be responsible for about 150 students. That's a lot of students to teach and keep track of.

We look now at some features of policy and administration of English in the education sector. Policy and administration of English language education involves a number of management-related issues. The first of these is government funding levels for education. This is currently set at 20% of GDP, with commitment to continue. The administration under President Jokowi, at the beginning of a second term in office has publicly announced the intention to provide funding to ensure that all children will have access to education. This is will low income families who may not be able to keep their children in school. It will create opportunities for advancement that were not available before.

The second issue is the size of the sector and the different levels of development in the western, central and eastern regions of Indonesia. These factors have huge implications. For example, how can you standardize education while at the same time make allowances for differences across the archipelago? Another aspect is that policy changes, whether ministerial directives or lower level policy statements, affect really huge numbers of people and make huge budget demands. It is no wonder that teachers and academics have a lot to say about these. It also affects research. Academics wanting to do national scale research into education or English education are challenged by the massive data that would be required to be available for nation-wide research, and sometimes also find that data collection may not be evenly covered across the country. On the other hand, compared with former years, there is a marked increase in the availability of funding for research in all areas.

Implementing policy is difficult because of the size of the education system. While great strides in education have been made, the Indonesian education

system still needs to run a very large bureaucratic system that is responsible for a wide range of issues. The structural properties of this system also can impact outcomes. For example, it must deal with the impact of policy changes due to rotation of top ministry officials, and the competing needs for continuity and responsiveness in policy. Attempts to improve the efficiency of the bureaucratic system have been made. Also, with such a large system, there is a need to allow adequate time for teachers to familiarize themselves with new policy statements. There is also the challenge of improving oversight and policy monitoring without at the same time burdening the teaching practitioners with masses of paperwork. As with such agencies in other countries, it is not possible to please everybody. So far, the ministry of education has in general produced well-reasoned and attractive policies as regards the teaching curriculum for secondary and tertiary education.

We look now at some of the key components for building quality in the education of English. At present, the real achievements of the education sector must be seen against recognition of areas that need improvement. This is found in policy discussion, education research and the everyday concerns of teachers and educators. These areas include:

- school management, teacher pay and remuneration
- class size and teacher workload; class sizes are particularly important for English
- teacher qualifications, training and development
- teaching methods and approaches
- teaching materials for English language teaching
- evaluation; English language tests and testing

Going forward, all of these areas need to be addressed to ensure that optimum outcomes across all parts of the nation are achievable and contribute to national development.

Industry 4.0

We look now at the economic and political background to the issue of Industry 4.0. This centers on the issues of knowledge economies, globalization and development. Why are some countries poor and others advanced? How do poorer countries develop to become advanced? How do natural resources and demographic factors also play a part? These questions concern developmental economists and others (Harrison and Huntington, 2000).

One of the key factors in developed economies is that they have more advanced technology and make more use of scientific knowledge than poorer countries. Another is that their economies are based more on knowledge than manual labour. Knowledge economies generate more wealth than those dependent on natural resource extraction and physical labour. So far, Indonesia has relied on its plentiful natural resources, in particular the agriculture and mining sectors. But this will not be enough, even when combined with the benefits of the demographic bonus. Indonesia must compete with neighboring countries, many of whom are successfully using new technologies and knowledge to become more competitive.

We also note that economies compete with each other in a global market; economies with advanced technologies are more competitive. The rich ones get more competitive, and so richer and more powerful while the poor get left behind. Indonesia is currently a developing economy and thus has the potential for growth while at the same time being vulnerable to being left behind.

It is helpful to look at the gradual develop of human civilization over a time period of thousands of years. One way of looking at this is that human advancement comes in waves or different ages. The time we live in has been referred to variously as the information age, the digital age, or the computer age.

Perceptive futurists have predicted such developments several decades ago. Alvin Toffler (1928-2016) was an American writer, futurist, and businessman who wrote about the digital revolution and the communication revolution, and their effects on cultures worldwide. In his book The Third Wave (1980) he predicts the civilizational transition from an agricultural society to a post-industrial one as a series of waves.

The First Wave is the settled agricultural society which replaced hunter-gatherer societies. In the first wave, the invention of the plough and the domestication of animals such as the horse allowed hunter gatherer ancestors to settle and grow crops and led to the birth of cities and specialism in types of work and also to writing systems and written languages.

The Second Wave is the industrial age. Meanwhile, from about 1760 to 1840, the industrial revolution saw the invention of the steam engine, the weaving loom and other innovations which drove the shift from agricultural work to industrial work, mass production and universal education.

The Third Wave is the post-industrial society, characterized as the information age. The information age is a period of human history in the 21st century. It has emerged due to the rapid development and spread of information technologies and is replacing those of the industrial revolution. Technologies such as personal computers, smart phones, GPS, the internet, digitization of books, media and scientific writing all are changing the way we interact, work and learn. These new technologies are creating disruptions in the labor market where certain jobs are beginning to be done by robots. One perspective on this era, prioritizing technology, is called Industry 4.0. Industry 4.0 is the fourth industrial revolution.

Education systems evolve to meet the needs of the technologies of each era. For example, in the industrial age, a need arose for workers who had an education that was suitable for work in the new factories and businesses. A largely agricultural workforce needed basic reading, writing, both literacy and numeracy. This led to universal basic education, and the attention to literacy. But it also used pedagogical methods that prioritized rote learning and obedience to authority. Such methods will not serve the needs of today's society, and the challenges of Industry 4.0; we need to make today's education suitable for the people of tomorrow.

Getting ready to perform Industry 4.0 holds out a challenge that we need to meet. In order for Indonesia to be prepared to grow to become an advanced economy by 2045, and not just a middle income one, we need to get the country ready to meet the many extra challenges that that entails. In particular, the planning for achieving these developmental goals recognizes the importance of the education sector and its role in creating a modern work force in a very short

space of time. Education needs to adapt so it keeps up with the way society is changing. This also applies to changes or disruptions in the job market where familiar jobs, such as taxi driver, doctor (GP) are being done by robots.

We need to get ready for Industry 4.0 in education. To face the disruption of the industry 4.0 era, both educators and students must strive to master a number of key new literacies, namely (1) big data literacy, (2) information technology literacy, and (3) human literacy. These are the three key literacies proposed by the Ministry of Research and Technology as necessary for producing a high quality performing workforce. The ministry also stresses access, relevance and higher education quality as important in this development.

We need to teach the new literacies in education, not just literacy as reading, writing and numeracy. The three new key literacies that the ministry considers as essential are defined as follows. Data literacy is the ability to work with big data without being overwhelmed to derive useful information; Technological literacy is knowing how materials, machines, and computer systems work, including coding, artificial intelligence, and engineering; and Human literacy means possessing an understanding of the arts and humanities, ethics, civics and communication. Data literacy and Technological literacy can be taught in the study programs and departments of university faculties while Human literacy should be implemented at the university level as a kind of General humanities education. Among the academics who have argued in favour of science and the humanities working together in education is Harvard professor of psychology Steven Pinker.

The curriculum is an important concept in higher education. The curriculum in our higher education today still is still largely competence-based. At its core are the traditional literacies, reading, writing and mathematics with logic and reasoning. In the innovation disruption 4.0 era, the skills most needed in the workplace will be those which are not easily accomplished by machines. These skills are social skills and emotional intelligence; Inclusive and comprehensive thinking; Complex problem solving capability; creativity and innovation; and Ethics, along with moral decision making. In other words, the humanities. Machines are evolving to do things that would have been unimaginable a few years ago, but there are still things that cannot be done by machines yet. This means that the

study of the humanities subjects should no longer be considered as in second place to the natural sciences and professions. Rather, they are a top priority to ensure that we do not become the victim of unexpected consequences of AI, robots and neuroscience. This is especially the case when we see how algorithm based applications and big data are breaking barriers with machines that can 'do' language, for example in translation software and robots that can hold a conversation with humans. We need to bear in mind that the machines still find some things about human cognition and language cannot yet be done by machines.

We move now to the issue of implementing Industry 4.0 in the language program. How does the language teaching professional respond to the challenges of Industry 4.0? First, we can see the current state of the art in language teaching is that there are three dimensions: (1) a cognitive science or psycholinguistic dimension where language is shaped by cognition; (2) a social-interactionist dimension in which language acquisition is shaped by social factors; and (3) a technology-assisted learning dimension, where new technologies are produced to assist the learner in autonomous or guided language learning. New technologies can be integrated into the learning experience. For this we need innovation in methods and materials. One of the emerging approaches is to integrate language teaching into the subject curriculum and to go beyond fluency development by requiring critical thinking and subject knowledge.

Looking forward

We have described a number of challenges for English in education. What is the way forward? If we are to create a new generation of pupils who can use English effectively then we need to consider what factors would be likely to have a part in outcomes. These are (1) Motivation and accountability. Motivation can be directed through financial rewards and other forms of recognition, balanced by accountability for results; (2) An outward, international, and future outlook with ELT serving real needs. This is an extension of knowing the importance of real world contexts for language learning; (3) A more adaptive and flexible syllabus, with the freedom for teachers to experiment and share their ideas. The syllabus should not be so full up that there is no time for new ideas. Teachers need freedom to experiment and to innovate, followed by sharing their successes (and failures) with

others; (4) The use of IT based approaches and modern methods and the development of a large collection of available materials; and (5) High quality evaluation and language testing; we need more Indonesians to get a PhD in language testing. Test design is highly specialized field. It is very important because test results may shape life paths and it is not fair to penalize a pupil with a fail grade because the test wrongly gave a fail grade when they actually have ability.

In conclusion, literacy, reading, writing and numeracy, for children and adults, remains an essential issue in education but we must now pay attention to new text types (genres), new media (e-books), and new ways of reading and writing texts. We need to teach the new literacies that are relevant in an Industry 4.0 era. Literacy in the sense of familiarity with new technologies and branches of knowledge requires that we include these emerging issues in curricula. We need to deal with the challenges of Industry 4.0 by assisting students to finding and learning to use new ways of obtaining information. In particular we need to teach critical skills that go beyond comprehension and also include critical skills about factuality and truth. Increasingly in the future, solutions to challenging real-world problems will be multidisciplinary, so we need to be able to teach ways of taking on the challenge of rapid learning and use of several fields of knowledge.

Importantly, we need to apply humanistic knowledge to ensure that technology is not the only driving force in shaping our future; we also must have a good understanding of how technologies are used and misused by humans and be aware of unexpected consequences, ethical and social aspects of new technologies in the workplace and society as a whole.

Acknowledgement

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