

The Possible Impacts of Online Learning on Future Education

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Abstract. Writing was introduced into teaching in the classical era and had a huge impact on teaching participants, both teachers and students. This impact is reflected in the most important vehicle in teaching, i.e., the teacher's speeches, which were recorded in writing and spread, thus broke the time and space constraints of teaching, allowing students to have the opportunity to learn from teachers from distant places, and even from ancient teachers. In this sense, writing and present online education are similar, yet writing has changed the way we teach, whereas the effects of online learning on the future of education are unknown. As a result, the impact of writing on teaching throughout the classical era can be used to. Drawing on discussions and examples of education in the literature of the classical era, this paper analyzes the influence of writing on teaching in the classical era and the similarities and differences between writing and online learning, predicting that future education will allow students and teachers to participate in education in a more decentralized way. However, due to the importance of interaction needed in education, online education has only changed the use and dissemination of teaching materials, the profession of teachers will not be replaced by online learning, and students still need to compete for better educational opportunities and career start.

Keywords: Online Learning; The Introduction of Writing; Education.

1. Introduction

In the past three years, COVID-19 has brought great changes to the residents in major countries in the world, reflecting in the fields of work, life, and study. It is now 2022, and the world is gradually getting back on track; however, it is foreseeable that many of the changes brought about by COVID-19 will even resume after the pandemic is over. For example, in the era of the pandemic, people have to wear masks in public places, and though this is no longer a forced requirement in many places, it will still last a healthful habit. The world will be greatly changed by the pandemic.

One permanent change due to the pandemic is online learning. It was ready before the pandemic, but it did not happen because of traditional inertia, risk aversion, or economic considerations. The spread of the pandemic forced people to accept this change, and then it was found that the changed work or life mode was acceptable, or even more efficient and friendly, so this change was fixed and became long-lasting.

Before the arrival of the pandemic, various technologies such as multimedia technology and broadband transfer required for online learning had been available, and online teaching in certain fields had been carried out for some years. However, due to various reasons, online education was not adopted by schools as the mainstream teaching method, so it was not until the pandemic spread and offline education became risky did online education, including online examinations and interviews, temporarily replaced offline education.

This new teaching method was tested on a scale never seen before. As a direct result to quarantines, participants in education-- students, teachers, and school administrators-- have typically conducted at least one semester of online education during this outbreak. Even after the pandemic, this established teaching model may continue to exist and occupy a very important position. Therefore, it is a meaningful study to predict the changes that online learning will bring to the education field in the future.

The method within this paper is comparing online education with an important change in the ancient teaching: paper materials and writing entered education and occupied an important position.

In addition to education for young children, most of the educational activities for teenagers and adults cannot neglect writing. Most students and teachers do not even know how to teach and learn without textbooks or written notes, but education did not rely on writing in its most primitive form. Taking archaic Greece as an example, early education was mainly based on oral transmission with poets and rhapsodes as educators or via precepts and deeds at aristocratic symposia, either ways without the necessity of writing [1].

Such oral means of education had been practiced for centuries, during which, generations of teenagers have been become capable adults, meaning that though the educators did not rely on writing, oral education was valuable and successful in the society at that time; however, it is hardly doubted that contemporary education emphasize on writing, manifesting such focus on textbooks, notes, and written examinations.

So how did writing, as a revolutionary change, come into teaching in the classical era? How did it permanently transform teaching and learning? The answer to this question can help predict how online teaching will change contemporary education.

2. The Influence of Writing on Education in the Classical Era

In classical Athens, education matured long before written materials became a common form of communication. There are also successful educational activities in societies without writing. The most common way of knowledge dissemination is oral education, and students also look up to the deeds and manners of the educators. Early poems often have educational functions to help listeners understand social rules and some practical skills. In Plato's Phaedrus, for instance, some praised Homer this way:

τὴν Ἑλλάδα πεπαιδεύκεν οὗτος ὁ ποιητὴς καὶ πρὸς διοίκησιν τε καὶ παιδείαν τῶν ἀνθρώπων πραγμάτων ἄξιός ἀναλαμβάνει μανθάνειν τε καὶ κατὰ τοῦτον τὸν ποιητὴν πάντα τὸν αὐτοῦ βίον κατασκευασάμενον ζῆν... [2]

(This poet has been the educator of Hellas; he is deserving of our study and dedication for the conduct and refinement of human life, and we ought to organize our entire lives under his direction) [3].

These people believed that Homer was the teacher of all Greeks, and that people should follow Homer's teachings throughout their lives.

In addition, certain social occasions, such as symposia and festivals, may also teach young people the rules of society, and thus are also viewed with high educational values. For example, boys compete with each other by reciting educational poems at festivals and in their school activities:

πολλῶν μὲν οὖν δὴ καὶ πολλὰ ἐλέχθη ποιητῶν ποιήματα, ἅτε δὲ νέα κατ' ἐκεῖνον τὸν χρόνον ὄντα τὰ Σόλωνος πολλοὶ τῶν παιδῶν ἤσαμεν. [4]

(As a result, many of us children chanted Solon's poetry while many other writers' works were read aloud at the same time.) [5]

In general, therefore, education in a nonliterate society is achieved through oral literature and practical activities.

There were also successful educators in the classical era, and many of whom became role models for modern educators to imitate. For example, the Greeks believed that the blind poet Homer was a successful educator, and although it has been long doubted whether Homer was a real historical figure, as mentioned earlier, the rhapsodes, who recited Homer, did undertake teacher's function.

Later, some ancient schools probably still did not rely on written materials, such as the Pythagorean school. In fact, as one of the most important scientists of the classical era, Pythagoras probably did not have any written works [6]. Socrates, who lived in the golden age of classical Athens, also did not leave his writings and opposed the use of words but he and Plato also testified to the success of this style of teaching as a successful teacher-student relationship [7].

Aristotle already used written material in teaching, notably leaving us with a huge amount of written works, but the school he started is described as Περιπατητική Σχολή because his favorite

teaching place was the pedestrian passage *περίπατος* in Athens, thus in teaching they needed to walk around, which is not conducive to the use of written materials, so at least his teaching process does not emphasize the use of textbooks and notes taking. Similarly, the later Stoics also chose the colonnade (*ἡ ποικίλη στοά*) as a teaching place, which, like the choice of Aristotle, is not suitable for reading and writing.

In the late Roman Republic, Caesar recorded an example of the refusal of Druids to use words in religious education:

Neque fas esse existimant ea litteris mandare. Id mihi duabus de causis instituisse videntur, quod neque in vulgum disciplinam efferri velint neque eos, qui discunt, litteris confisos minus memoriae studere: quod neque plerisque accidit, ut praesidio litterarum diligentiam in perdiscendo ac memoriam remittant. [8]

(Despite using Greek letters in practically all other situations, including their public and private interactions, they do not believe it is legal to put these things in writing. They appear to have adopted this practice, in my opinion, for two reasons: first, they don't want the general public to learn about their doctrines, and second, they don't want those who do learn to put as much effort into memorizing information while relying on writing. Most men, it seems to me, are aware that when they rely on writing, they tend to be less diligent about learning material thoroughly and using their memory) [9].

Although in all other departments of society writing is used and the Druids were holding the authority of culture, in their most important field, i.e., religion, they still considered writing unnecessary and even harmful resisting it in its actual use. Caesar believed that there were two reasons for this: 1) they were unwilling to let the religious teachings spread to the people, which would cause the loss of their authority to interpretation; 2) they wanted to avoid students relying too much on written materials and ignoring the recitation of teachings, which were likely to happen if they were allowed.

In Jewish culture, the communication between Jesus and his disciples also lacked writing, and the writing of Bible was a generation later than the time when Jesus lived, which also means that even long after Jesus' crucifixion, the operation of churches did not rely on the use of writing.

But writing still entered education and held an important place.

Writing in classical Athens was becoming popular, and students at that time often needed to learn to write, as well as grammar, i.e., the rules of written language. The works of tragedians Aeschylus, Sophocles, Euripides, and of the comedians Aristophanes and Menander, were preserved in the form of written works, which shows that writing has become an important record tool at that time.

In Plato's dialogues, even though Socrates always taught people verbally, he still needed to answer the question: of why writing is not a good thing. In a society without writing, teachers do not need to answer such questions. Although Aristotle liked to teach while walking, he left a lot of written works. The opinions of pre-Socrates philosophers are known to us through Aristotle's writings. The same is true of the Stoics since they also recorded their opinions despite the inconvenience of their teaching place.

Outside of the Greco-Roman world, even if the Gauls believed that religious education should not use writing in the consideration of keeping secrets, they use writing in other circumstances, thus obviously they had to cultivate a group of scribes. The Christian church, not too long after Jesus, also quickly acquired writing through the letters and the Gospels.

In short, the application of writing has brought great changes to education.

3. The Impact of Written Materials

The direct reason for the wide spread of writing is its alongside benefits. Writing can preserve a piece of speech for a long time, retaining the information and ideas conveyed by speeches, helping them be transmitted across the barriers of time and space. For instance, even today's students who are over 2,000 years after the death of Aristotle, or those living in late antiquity or the Middle Ages who are closer to his life, could learn from him through the extensive literature left by him, but those

thoughts that had not been recorded in writing will not be passed down to the present. That is why there were still Aristotelians in the Middle Ages [10].

For the contemporaries of the ancient scholar, the possibility of crossing space is more important. Socrates taught only orally, so his pupils could only be Athenians. But no matter where you live in the Mediterranean world, due to the existence of Plato's dialogues, Socrates's speech is recorded in writing, and people can always understand Socrates' thoughts, even if they have never been to Athens. This, in an age without writing, could only be done barely through many pupils, a school.

Moreover, in transmission, writing can keep information unchanged. Taking Christianity as an example, writing allowed missionaries in different regions to preach in a similar way, which is not possible if they do not hold the same writings. If transmitting information relies fully on face-to-face interaction, concepts will likely be twisted over time. Communication can be seen as passing a piece of clay back and forth between the speakers, thus the shape of the clay changes every time it is passed to another person.

Finally, writing helps a particular teacher reach as many students as possible. In oral teaching, limited by the strength of human vocal cords, the number of students directly taught by teachers is not too many, mostly less than 1,000. But the dissemination of books has no boundaries, and teachers can influence an infinite number of students. Thus, if a teacher is famous enough, he can educate countless students through written works. For instance, most of the students in the Middle Ages received Aristotle's science education in their first few years in university. They read Aristotle's books and could be counted as Aristotle's students, but the students taught by Aristotle himself were less than this amount. In the absence of writing, Aristotle would not be as influential as he is now.

Despite the above advantages, there are still quite a few opinions against the role of writing in teaching in the classical era, mainly in two aspects:

First, writing may cause students to forgo memorization and comprehension in favor of recourse to many written materials. Therefore, Socrates prefers oral interaction:

σύ, πατήρ ὧν γραμμάτων, δι' εὐνοίαν τὸναντίον εἶπες ἢ δύναται. τοῦτο γὰρ τῶν μαθόντων λήθην μὲν ἐν ψυχᾷ παρέξει μνήμης ἀμελετησίᾳ, ἅτε διὰ πίστιν γραφῆς ἔξωθεν ὑπ' ἀλλοτρίων τύπων, οὐκ ἔνδοθεν αὐτοὺς ὑφ' αὐτῶν ἀναμνησκομένους; οὐκ οὐν μνήμης ἀλλὰ ὑπομνήσεως φάρμακον ἡῦρες. σοφίας δὲ τοῖς μαθηταῖς δόξαν, οὐκ ἀλήθειαν πορίζεις. [10]

(Now that you are the father of letters, your passion has caused you to attribute to them a power that is contrary to what they actually possess. Because they won't regularly practice their memory, folks who learn to use this invention will become forgetful. Their confidence in writing created by outside, non-self characters will dissuade them from using their own memories. You have created a reminder elixir rather than a memory elixir, and you give your students the appearance of wisdom but not actual wisdom.) [10]

He believes that if students rely on external tools for memory, then they will not memorize useful things: words are not wisdom in themselves, but merely a tool for reminding, and when people rely on it, they become more forgetful.

A similar opinion was held by the Gauls of the late Roman Republic, who, as mentioned earlier, rejected the use of writing in religious education because it might make students dependent and thus give up memory.

Second, the use of writing can damage social relations. For example, the Druids of Gauls feared that their religious teachings would flow into common people and that the content of written records might replace the influence of religious authority on them. For the same reason, some ancient civilizations refrained from turning customary law into written law.

Finally, words can faithfully record thoughts, which sometimes leads to leaks. For denominations without words, information can only be kept by people, and the cost of keeping and hiding it is high. And once the information is recorded in writing, the dissemination of this information will be difficult to control, and the spread will be longer and wider.

4. Similarities between Written Materials and Online Teaching

Modern online learning relies on multimedia technology and broadband transfer. Multimedia technology includes video and audio, which can reproduce the scene of classroom in the absence of teachers, and broadband transfer can help people at remote distances to communicate in real-time. Teaching activities are carried out by teachers in one place, and students can reproduce the classroom at the same time or later at their convenience in other places. In addition, if teachers and students are online at the same time, direct interaction is possible even if they are in different spaces.

These two technologies have matured earlier. Among them, video and audio recording technology have been developed at the beginning of the last century, and the film industry is based on these two technologies. Therefore, in theory, the physical transmission of teaching content through video tapes can also achieve the purpose of distance education like today.

Besides, this kind of teaching method that relies on physical information media for communication can be realized even when audio and video recording technology is not used. That was the systematic use of written works in education, i.e., correspondence education, which is also the method used in traditional education to reproduce classroom content. This teaching method has long been used in international education [10].

The changes brought about by broadband technology are mainly reflected in the immediacy of interaction. In the early days, because online devices were not portable enough and the transmission efficiency was low, instant interaction was often not possible, and e-mail services like traditional letters were used. Today the availability of broadband networks has allowed contemporary educators to break through geographical constraints and communicate directly with learners in different areas. Remote live teaching becomes possible, and online storage can also reduce the difficulty of retrieving and obtaining information, therefore students can study at any time.

In addition, there is no upper limit on the number of students in an online classroom. Therefore, online classes allow famous teachers to influence more students.

It is not difficult to see that these changes also occurred when writing was introduced into education: writing can retain teachers' speech; the dissemination of writing helps students to learn far away from teachers, or even from ancient teachers. This is an opportunity that illiterate society cannot provide. Therefore, it can be reasonably predicted that if online education is widely introduced into education, the impact should be like the change brought by writing.

5. Speculation on the Possible Impact of Online Education in the Future

Education is an activity performed by both students and teachers. Compared with traditional teaching methods, online education breaks through the limits of time and space for both, so that teachers are no longer limited to the classroom, and students can also carry out teaching activities in other places.

For teachers, breaking the constraints of time and space makes teaching easier because it allows teachers to educate in self-organized studios, or even their own homes, which not only saves commuting time but also time spent dealing with administration and interpersonal relationships. However, because the number of students who can be influenced by the same teacher has lost its limit, theoretically, few or even only one teacher can meet the learning needs of students. This seems to reduce job opportunities for average teachers. But that probably will not happen.

This impossibility can be inferred from the comparison with the classical era. Like modern multimedia technology, textbooks of the classical era can also record the key content of a classroom, and directly educate students from afar or a long time later. In this way, it seems that Aristotle himself could put all classical and medieval teachers out of work. But that did not happen. Education still flourished in all prosperous times, such as the High Middle Ages, when Western Europeans invented university, a model of education that lasted nearly a thousand years until now.

This is because teaching is not a simple transmission of knowledge. It requires interaction between students and teachers, and the interaction cannot be completed by the media, neither written works

nor multimedia: textbooks are unlikely to change teaching styles for different students, and neither are videotapes nor a screen.

In this regard, Socrates provides a sensible description:

δεινὸν γάρ που, ὦ Φαῖδρε, τοῦτ' ἔχει γραφή, καὶ ὡς ἀληθῶς ὁμοιον ζωγραφία. καὶ γὰρ τὰ ἐκείνης ἔκγονα ἔστηκε μὲν ὡς ζῶντα, ἐὰν δ' ἄνθρωποι τι, σεμνῶς πάνυ σιγᾷ. ταῦτόν δὲ καὶ οἱ λόγοι: δόξαις μὲν ἂν ὥς τι φρονοῦντας αὐτοὺς λέγειν, ἐὰν δὲ τι ἔρη τῶν λεγομένων βουλόμενος μαθεῖν, ἔν τι σημαίνει μόνον ταῦτόν ἀεὶ. ὅταν δὲ ἅπαξ γραφῇ, κυλινδεῖται μὲν πανταχοῦ πᾶς λόγος ὁμοίως παρὰ τοῖς ἐπαῖουσιν, ὡς δ' αὐτῶς παρ' οἷς οὐδὲν προσήκει, καὶ οὐκ ἐπίσταται λέγειν οἷς δεῖ γε καὶ μή. πλημμελούμενος δὲ καὶ οὐκ ἐν δίκῃ λοιδορηθεὶς τοῦ πατρὸς ἀεὶ δεῖται βοηθοῦ: αὐτὸς γὰρ οὐτ' ἀμύνασθαι οὔτε βοηθῆσαι δυνατὸς αὐτῷ. [10]

(Writing, Phaedrus, has this strange quality, and is very like painting; for the creatures of painting stand like living beings, but if one asks them a question, they preserve a solemn silence. And so it is with written words; you might think they spoke as if they had intelligence, but if you question them, wishing to know about their sayings, they always say only one and the same thing. And every word, when once it is written, is bandied about, alike among those who understand and those who have no interest in it, and it knows not to whom to speak or not to speak; when ill-treated or unjustly reviled it always needs its father to help it; for it has no power to protect or help itself.) [10]

As Socrates said, although written material can record speech, it cannot communicate with readers but always speaks the same thing to everyone, not to teach more for a wise reader, nor to avoid misunderstandings. The nature of textbooks has always been like this from the classical era to the present. It cannot solve students' confusion but can only be used as a teaching aid, cooperating with a human teacher, allowing students to learn outside the classroom, and as reference material for teachers. Therefore, although textbooks can replace the role of teachers to a certain extent, it is still impossible for teachers to withdraw from teaching activities, even multimedia textbooks in modern online education.

For students, in the past, learning could only be carried out in a specific place and at a specific time, but now there are more possibilities. The biggest change is the learning opportunity. Since the traditional teaching environment can only provide fewer educational resources, students need to try their best to obtain the opportunity to become a student of a certain scholar or to be admitted by schools and a university.

The emergence of writing changed this model, allowing the inheritance of schools to last for thousands of years, regardless of whether the inheritance of school personnel continued. Although not possible to be admitted by the Aristotelian school, the Lyceum, a medieval scholar could still be a student of Aristotle, an Aristotelian. Students majoring in theology today also have access to the teachings of Thomas Aquinas, so there are many modern Thomists.

The advent of online education reinforces this change. Contemporary teachers can pass on more sophisticated ideas into the future through multimedia recording and storage. To a certain extent, this challenges the admission mechanism of the university, allowing students who are willing to study to have access to education even outside the university and reduce the cost of study. The impact of this can be compared to the educational opportunities brought by writing in the classical era to the youth of the Mediterranean world.

However, the possible impact of this change in learning should not be overestimated, because as mentioned above, teachers still have important functions in the teaching process, and the direct interaction opportunities that excellent teachers can provide are still very limited. For the same reason, schools will not disappear because of the dissemination of knowledge as the appearance of textbooks did not lead to completely equal opportunities for all students, and so do the multimedia teaching material.

However, the school may break the geographical restrictions due to the development of broadband communication. Members of the same school no longer must be in the same space, which may make the school more influential and have access to resources through participants from different regions and backgrounds.

6. Conclusion

The development of multimedia and broadband technology has made it possible for online education to replace offline education, and COVID-19 has forced many teachers and students to try it. If the pandemic has left a lasting impact on teaching methods, it can be compared to the introduction of writing in the classical era.

Like writing in the classical era, current online education breaks the constraints of time and space, which grants more freedom for both students and teachers. But these effects do not undermine the identities of both.

Even though multimedia and broadband technology can realistically simulate a classroom, the need for interaction in an online classroom is still significant for teaching and must be performed by a human teacher. For students, even as multimedia teaching material becomes more effective and accessible, opportunities for communicating with good teachers still need to be earned through a system of estimation. Therefore, teachers will not disappear, and for students, it still requires much effort to earn an opportunity of learning directly from a good teacher.

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