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Technological Determinism, New Literacies and Learning Process And The Impact Towards Future Learning

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Abstract. The interest of this research is to investigate technological change, new literacies and learning processes which impact future learning. With technological determinism, the members of the university need to have technological knowledge, belief of change and adopt the technology. The problem in this research is the habits in the individual who works within our campus that would not change, because with the new literacies used and introduced in communication, besides learning in using online systems will continue to be implemented. The research sampling is conducted of 76 respondents, consisting of students, lecturers, employees, staff and technicians. And this research method uses is quantitative methods and semi-structured qualitative methods. The result obtained that there are members of campus who are willing to change in communication and the ways of thinking and acting to follow the change in future learning 4.0 industrial revolutions.

Keywords: Technological determinism, new literacies, social changes, new technologies, future learning

INTRODUCTION

In the 4.0 Industrial Revolution, technology has significantly transformed in improving, shifting certain activities for human activities. As a new media, social media is a powerful tool for communicating rapidly without intermediary gatekeepers to spread new ideas (Schwab, 2015). Technological changing is established in this direction and it is representing a prerequisite for changing society (Evans, 2011). The belief of technological changes in the principal initiator of society's transformation or technological determinism which will change the society, technological development,

communication technology and media (Veblen, 2013). The expansion of computers, networks, and the Internet has rapidly changed in many aspects such as human communication, the entire society's life and the rising popularity of new media has changed in the way the society and individual act, one of them is changing in education (pp.86). The previous research by Hauer, T. (2017) indicated that society is influenced and shaped by technological development which is needed to adjust and adapt to new technologies and innovation. And some consequences of technological development are the result of poor use by the people not of the very mature technology. Also, any social changes are

controlled by technology, such as communication and media. And people must develop themselves to innovate and ready for new technologies to follow the changing in many aspects. Another previous research by Hurst, M. (2012) stated that the proponents of technological determinism in society are influenced and shaped by technological development. It has to adjust and adapt to new technologies and innovations. New literacies on the Internet have shown a new way of writing. By uploading and downloading the information, images, videos will make communication changed (Balaban-Sali, 2012). Collaborative pages allow users to easily add, delete and change content to be set or rearranged as needed and the messages are sent in real-time between the individual online. Moreover, mobile phone users can access the Internet and website broadly (Baruah, 2012). The learning process will create a demand for communicating, sending material and the lecturers will be productive in giving the learning. Students and lecturers believe that their complaints are heard by the authority, the students and the lecturers will not miss the learning. And the most important thing is the lecturers believe that their existence is irreplaceable (Hussin, 2018).

The problem in Tangerang City area, many lecturers have difficulty in changing the learning process by using technology. Many of them are insecure that they might be wrong and also they are afraid that people would laugh at them if they make some mistakes. Moreover, the staff at some campuses have not changed the way they communicate with each other. It may have difficulty when some of them would answer the questions and give the instruction either by email or by WhatsApp or others. Also, some students who come from remote areas have the same difficulty, they know how to answer the WhatsApp but they do not understand to use the PowerPoint or the Internet. The fear and belief that to change are one of the biggest problems in Tangerang City campuses society. Some of the members do not want to change at all. The ability to control all of mechanical age, the period of significant changes and acceleration of life pace, is faster due to the continuous development of technology and this will raise the impact on communication, especially in education.

The communicative skills on social media in reading, speaking, listening, and writing for the member of campus are changed by using media technology as a platform. The change of communication is the central problem in our

campus. So, the purpose of this research is to investigate the problem of technological change even though society has changed, also this research is to seek the impact of communicating each member on social media. Furthermore, these technologies continue to evolve, the ethical issues such as equal access to resources become imperative. Educational technologists must expand their forward-thinking leadership and planning competencies to ensure effective use of new technologies (Mayes, Natividad, & Spector, 2015)

New Media as Determinism of technologies change. Technological determinism is the theory that a society's technology determines its cultural values, social structure, and history. According to Hauer, T (2017), social progress follows an inevitable course that is driven by technological innovation. Technological determinism has two central concepts: 1) that technological development itself follows a predictable, traceable path that is beyond any cultural or political influence; and 2) that the technology, in turn, organizes society in a way to further develop itself. The communications theorist and media scholar Marshall McLuhan laid out one famous example of technological determinism in his book *Understanding Media: The Extensions of Man*, wherein he asserted that "the medium is the message." This rejection of "content" in favor of the technological medium as an important consideration in media studies is only one facet of technological determinism, but in many ways, it is the classic example." The contradictive in the theory of social construction technology holds that society itself shapes the consequences of technology (Evans, 2011). Although technological determinism has largely fallen out of favor with academia, it remains a popular view throughout popular culture. It is a belief that technological determinism is the principal initiator of the society's transformation. In terms of communication, technological innovation transfers the message to change humans and society in the way of unifying the people and encourage participation and expand the scale of impact (McKean, 2012). The combination of online media technology with offline activities creates a social movement and impactful changes to the way of communication. Without realizing the change, people have already changed the way of communication, like it or not people need to adopt technology that makes it easy for them to connect (Thitivesa, 2017). The link to establish

the technological change with the way of communication is to transform from offline communication to online communication. The moving of changing toward a digital society and digital communication must provide the platform to define the way of communication (Fasouli, 2014). The computers, the internet, and smartphones play a central role in changing the way of communication. Media is the landscape of the changing and the growing concern about the new form of communication is polarized and also given privacy threat (Schwarzenegger, 2017). The relationships between technological change and the new media are the virtual reality by using persuasive technology to make the communication natural. The stance of technological determinism refers to the way of human interaction which has the power of attitudes that will be used by people so that the human being is the power of machines that can work anytime. Besides, human hands are controls that use intelligence as machine creation (Anderson & Rainie, 2018). The most talk about technological change versus social determinism is lacking acknowledging who create the technology of the machine. As man-made, humans construct the computer for the internet which gives the option for most machines such as phones and other electronic devices (Lebowitz, 2011). People need to be given the education about technological changes through the functionality in order not to have hypocritical and outrageous.

New Literacies in 4.0 Industrial Revolutions. The change in the 4.0 industrial revolution changes the way people communicate, either communicate via the internet or social media which is different from the way people communicate face to face. When people talk, it means people write on social media and when people listen to means they comment on social media. New literacies build the ability to read and to write. Thus, a broader literacy reveals not only reading and writing, but also the ability to engage in all types of communication such as textual, graphical, and auditory (Knobel & Lankshear, 2014). Moreover, literacy involves not only communication but also managing the information which is transmitted by the communication medium. To choose the appropriate communication means to communicate and manage the information in a given context that is essential to activate the people and individuals in society (Balaban-Sali, 2012). According to Leu, et. Al, (2007), there are

four characteristics of new literacies, first is the emerging information communication technology (ITC) tools, application, media, and environments require novel skills, strategies, and dispositions for their effective use; Second is new literacies are central to full economic, civic, and personal participation in a globalized society; Third is literacies constantly evolve as their defining ICT continuously are renewed through innovation; fourth is new literacies are multiple, multimodal and multifaceted. And the other researcher from Hui (2018) provided that the divide between academic and everyday literacies by examining the practices and perceived effects of new literacies on academic learning, such as discipline-based on academic literacies including English language proficiency among college students in the digital humanities. In the 4.0 industrial revolution, learning is without boundaries; and the students learn everywhere and have unlimited access to new information. Learning involves collaboration with the team members and learning at the other places than in the classroom which interests them (Hussin, 2018). The digital tools and an online forum such as social media are preferred as the students prefer to be integrated into the learning process. Social media as the tool is expected to be the tool with low access barriers and this thrives in the fourth industrial revolution (Leopold, 2017). Kozinski, S., (2017) stated that the highlighted the following learning preferences for students are fully engaged in the learning process. The students welcome the challenges and enjoy the group discussion and highly interactive learning environment. It means learning without boundaries with unlimited access to new information. Because the learning is involved activity of collaboration with the other students in comprises five over aching sub-elements provide a holistic view of literacy capability and are supported by detail given in the remaining sub-elements (NLLP, 2016). Moreover, the new literacies on the Internet and social media are one of the learning processes for students to collaborate and to assess the learning.

The development of hypothesis in this research is to find the bridge of the gap from the question in the questionnaires to investigate, the hypothesis is connecting between variables of technological determinism and new literacies in the learning process for 4.0 future learning. The impact of new literacies in the learning process constructs the specific variables. The researcher creates a null hypothesis that states that there is

no observation of impact. And the intention to remain the observation indicates the presence of the impact of technological determinism and the impact on the new literacies in the learning process on 4.0 industrial revolutions.

METHOD

This quantitative research is to determine the technological determinism and to find the impact on the new literacies in the learning process in 4.0 industrial revolutions. 76 respondents are from lecturers, staffs and the students on campuses Tangerang City area selection which has been spread out through Google Form. And data collection techniques regarding the qualitative was done from the interview from students, lecturers, and staff or **Table 1**. Data validity and reliability results

No	Variables	Reliability	Correlation	
			Pearson	Sig. (2tailed)
1	Technological Change	.700	.658	.000
2	New Literacies	.746	.703	.000
3	Learning Process	.603	.683	.000
4	Future learning	.725	1.00	.000

From the data tabel 1, it is shown that all the questionnaires are reliable and valid. So, the research continues to proceed.

The creation and deployment of the research are mainly to get the significance of technological determinism and its impact on the new literacies in the learning process on future learning in the 4.0 Industrial Revolution. There are 15 questions developed and had crosschecked to measure respondents' use of new literacies in the learning process. Before the research, an extensive exploratory phase was conducted to issue the importance to the user of new literacies. The questionnaires are divided into 3 categories which are (1) technological change to have technological determinism is 5 items, (2) New Literacies in 4.0 Industrial Revolution is 5 items and (3) Learning process in 4.0 Industrial Revolution is 5 items.

Data collection was constituted faculty of Science and Technology, Universitas Buddhi Dharma, Tangerang, Indonesia. The questionnaires were used as an instrument to elicit the return responses of respondents regarding social media use from each division such as from 50 students; 12 lecturers; 9 staff and

member of the university in September 2018. Data research is taken from the literature review, observation, and questionnaires that had been developed by the researcher. Semi-structure interviews were conducted by the author (Jamshed, 2014). The result of questionnaires will be analyzed by using SPSS version 23 of frequencies from each variable of the questionnaires. A series of works had been undertaken to collect data for the research. Related literature was reviewed and a questionnaire was developed and observed by the author. The questionnaires are used and found out that the validity and reliability of technological determinism, new literacies and the learning process for future learning 4.0 are shown in table 1:

5 technicians. The questionnaires were taken in the week 2 month of September 2018.

Hypothesis. There are three categories of technological determinism and its impact on the new literacies in the learning process. (1) The technology has changed the way of learning and communication; (2) The new literacies are used for learning and communication; (3) The learning process is used by technology; (4) Having future learning in 4.0 Industrial Revolution

RESULT DAN DISCUSSION

The result of the research study is to determine how significant the impact of technological determinism on new literacies in the learning process. From the finding, the research study examined the data above that most members of the university (technician, staff, lecturers, and students) have a positive impact on the change of technological on new literacies. To find the result of data, the research uses SPSS version 23 and it is shown in table 2. The first is to show the descriptive statistic of the frequency of each variable X, Y, and Z.

Table 2. Descriptive statistic of the frequency of X, Y and Z

Technological Change					
	Means	Std. Error	Std. Dev.	Frequency	Percentage
Innovation	3.58	0.071	0.617	48	63.2 %
Understanding	3.59	0.068	0.593	49	64.5%
New Media	3.63	0.067	0.585	49	64.5%
Policy	3.63	0.072	0.629	54	71.1%
Limitation	3.39	0.080	0.694	39	51.3%
New Literacies					
Application website	3.64	0.064	0.559	52	68.4%
Service	3.62	0.070	0.610	52	68.4%
Storage for Journal	3.55	0.073	0.641	48	63.2%
Page to use	3.59	0.080	0.696	53	69.7%
Message online	3.29	0.083	0.727	33	43.4%
Learning Process					
Service Online	3.51	0.081	0.702	46	60.5%
Communication online	3.39	0.080	0.694	38	50%
Expression	3.61	0.062	0.554	48	63.2%
The use of learning	3.34	0.100	0.873	42	55.3%
Discovery of website	3.32	0.082	0.716	33	43.4%

The highest point of frequency is policy. The respondents understood that the influence of technology in making changes and managing the information through the contents such as political and economic policies, changing the curriculum in the countries.

There are two highest points of frequency in this research; there are understanding and new media. The respondents understood the technology and the respondents may create a change in learning, politics, social and economics. The new media have the same frequency as understanding means that the respondents have been introduced to digital applications and the websites as the large-scale changes of communications such as speaking or comments on the Internet, listening or reading the comments, reading the information and writing the page or blogs.

The third highest point of frequency is to believe the technology to be the power of innovation in changing the world. The belief that the respondents would change themselves through technology is the part of 4.0 Industrial Revolutions which are all of the movements and communications are using 4.0 industrial revolutions.

The fourth highest point of frequency is the limitation of ideas which is the opposite of determinism and the lack of planning for change.

It can lead to the recognition that has an impact on technology and to the institution.

For new literacies, the highest point of frequency is Page to use, it is shown that a collaborative page allows the users to easily add, delete and change the content to be set or rearranged as needed. The collaborative page means the page from institutions or from the group which the people can use it together

There are two highest points for the second place, there are application websites and services; for the application website, the respondents use the mobile phone to access the Internet and other sites widely, and the other is downloading and uploading website application for communication. The respondents use the easiest, the cheapest and the most uses of application to communicate with each other.

The third highest point of frequency is storage. The storage is for everything such as Google Drive, DropBox, and others. It functions for storing the information for the group, for the campus or others.

The fourth highest point of frequency is the message online. The online message is important and some of the respondents have ignored the message and prefer to listen to the other friends or colleagues.

For the learning process, the highest point of frequency is the expression. It is important to find out the expression since they

have not been in the class. The important of expression is to know that the students or the lecturers have understood what they have been discussed.

The second highest point of frequency is the service online. The service online is important for the respondents to continue the use of learning. If the service online is cut off, the students and the lecturers are not able to learn anything, also the staff and the staff in the laboratory. The connection of the Internet must be done correctly. Because the learning has the time limit, if the connection is slow or cuts off, there is no learning.

The third highest point of frequency is the use of learning. The students and lecturers desire that the complaints are heard by the authority. The authority must have a decision to

understand the complaints from the students and lecturers as their stakeholders.

The fourth highest point of frequency is communication online. The learning pathway creates a demand for communicating, website and sending material needed for the production of learning.

The fifth highest point of frequency is the discovery of the website. It means that to the discovery of the website does not mean to replace the teacher or the lecturer. Because the lecturers believe that their existence is irreplaceable.

Next is to describe the statistics of regression linear between variables which allow the variables to have an effect or relation to each other.

Table 3. Descriptive statistics of regression linear between variables

Model	R	R Square	Adjusted R Square	Change Statistics		
				F Change	Sig. F Change	α Cronbach
X	0.824 ^a	0.679	0.673	56.592	0.000	0.785
Y	0.703 ^b	0.494	0.488	72.371	0.000	0.791
Z	0.738 ^c	0.489	0.480	30.127	0.000	0.740

a. Predictor: (Constant), Technological Change

b. Predictor: (Constant), New Literacies

c. Predictor: (Constant), Learning Process

From the data table 3, it is shown that there is a relation of each variable of technological change, new literacies and learning process for future learning 4.0 Industrial Revolution. The test R of technological change is 0.824, which means that the technology is being used and the R square is 0.673 means that there is a technological change and the other 15% may not include in this research. Also, the probability value of the test (0.000) or $p < 0.000 < 0.005$, the result of the technological change is accepted.

For data new literacies or Y, R is 0.703. It is still shown that R is strong, means that the new literacies can be used nowadays. The simultaneous contribution of Y is 0.494 or 49.4%, it means that new literacies are being used, even though the value is shown not very strong. On the campus, the new literacies are used and all of the members of campus understand that the use of new literacies is a must. The 50.6% from the research is not covered, or it needs to be used and understood by the campus. The

probability of the testis (0.000) or $p < 0.000 < 0.005$, the result of the new literacies is accepted.

The learning process or Z is shown that R is 0.738, it is strong that the learning process through technology is used and in demand. The simultaneous contribution of Z is 0.489 or 48.9%, even though it is still less than 50% of the learning, but the use of the learning process by using technology and new literacies are still in demand. The other of 51.1% is not from this research or it may still use the conventional learning process. But the author appreciates the learning change through technology and new literacies. The probability value of the test (0.000) or $p < 0.005$, the result of the learning process is accepted.

From the data reliability of the text is found that the highest reliability is from new literacies (Y) 0.791, which is very strong; and the second-highest is from technological change (X) 0.785 and the last is from the learning process (Z) 0.740. All of the reliabilities of Alpha Cronbach of the questions in the questionnaires are reliable.

Discussion

Being able to run the new technology in the learning process is one of the fundamentals of success in education. From the result above, it describes that technological determinism has changed the literacy in the learning process for future learning. The change of technology consists of knowledge of technology, the technology itself and belief (Dalkir, 2005). Technology needs to be used in the learning process; it is shown that in technological change (X) of R is very strong, it is 0.824. The simultaneous contribution of X is 0.678 or 67.9% and it showed that the members of campus (50 students, 12 lecturers, 9 staff and 5 technicians) have agreed that the campus needs to change the members' habit and should move of using technology to follow the 4.0 Industrial Revolution. When the interviews were conducted, the policy is one of their biggest concerns which is the highest frequency of the research on technological change. The policy involves conducting a critical analysis of the internal and external aspects of the learning process. The provider must provide technical assistance and capacity-building support for institutional counterparts in conducting analyses and reviews (UNESCO, 2017). Also, the act of strategy to promote dialog, exchange and peer learning around education challenges offer the opportunity to nurture the reform of education (Lall & Teubal, 1998). And also, the influence of technology is changed about how the change is managed by the political, economic policy in the institution and with the bigger scale is in the nation (Hussin, 2018). With the limitation of the idea, due to the limitation of ideas, there are contradictions against determinism which can lead to inadequate recognition of unexpected and unplanned technological change on the change (Kozinski, 2017). The belief in the power of innovation is to shape independence from political, economic, and social as the merge of technology is a cause of novelty(Hauer, 2017)Technology is included in the understanding of the condition of the circumstances to follow the better condition for future learning. Media study is concerned on television and it will change to new media with the changing on a big scale to introduce digital applications and websites (Rushby, 2013).

In new literacies (Y) with the R is 0.703, the new literacies are being used on the Internet. It showed that R is very strong, the simultaneous

contribution of Y is 0.494 which is strong enough, and it means that the members of the campus understand the new literacies on the Internet. Half of the members of the institution need to learn more about the new literacies. When the interview took apart, with changing the way of communication it will change the habit of literacy and the members should have learned more about the new literacies. The members should practice using new literacies. In new literacies, the page in use is the highest frequency in new literacies; it is 53 respondents or 69.7%. Page comes in a collaborative way which may get the uses to add, or to delete, to change the contents which can be able to manage and to arrange according to the needs (Knobel & Lankshear, 2014). Android phone users in accessing the Internet and website are widely used, therefore the page can be used to download, upload on the application website. The message services sent via communication protocols allow the messages sent via an application such as WhatsApp, Hangout, Chats or others (Evans, 2011). When the interview was conducted it was mentioned that they use a lot of acronyms such as LOL (laughing out loud) and the use of emoticons to show the emotion of the talker shortly. The message is sent the users use the emoticon to show the expression of the face as a symbol and the users use the keyboard to get emoticon. The weakness of emoticon may be vulgar enough and it may get misinterpretation. Moreover, it was mentioned that new media of learning on the Internet, the communication on campus is getting easier (Groshek & Tandoc, 2016). The use of the application on the website and service is on the second level of this stage. The application on website and service showed that the Internet access and website is used broadly to send the message and to download the application. The service online refers to the information and services provided over the Internet. The services not only allow subscribers to communicate with each other, but they also provide unlimited access to information. Online service can range from simple to complex which provided over the Internet and it ranges from simple to complex (Hussin, 2018); (Hemsley & Mason, 2013). The third level of frequency is storage for the journal; it is 48 respondents or 63.2%. The 2.0 social webs are shown to the users to interact and to collaborate in social media dialog. For example, social website 2.0 including social networking sites, blogs, wikis, video sharing sites, hosted services, website

applications and can be mentioned like Facebook and Twitter (Groshek & Tandoc, 2016). Web-based journals or blogs are often used by individuals to the group to maintain important notes, thoughts, images and interests in the online diary in real-time (Hauer, 2017). The last frequency is message online, there are 33 respondents or 43.4% chose message online. Using message online gateways makes sending text messages easy, but it does have the limitation of requiring knowing which service provider is the target. And this can usually be overcome by having the user simply select the name of the provider while on the website or checking the header of the incoming message (Rosenfeld, 2008).

In the learning process (Z) with R is 0.738, the learning process is implemented on the internet. It showed that R is strong and the simultaneous contribution of Z is 0.489 which is strong enough, it means that the members of the institution understand that learning on the Internet is quite good and run well. And it also showed that the member of the institution agreed that the learning process is one of the most successful learning. When the interview was done, some of the interviewees had stated that the expression to support access to a variety of tools and approaches giving the learner options is in how they present and share their learning. The tools are to accommodate learner complaints. Usually, the learners ask for communication lines such as a special line or channels to accommodate the complaints. Therefore, the learner believes that the complaint is heard by the teachers or lecturers and the teachers or lecturers believe in its existence in online learning. The use of learning can be incorporated into any program on the campus. The service-learning pedagogy is to maintain an interactive environment in online courses. Also is to encompass various activities, depending on size, demographics, and locality. Studies conclude successful online instructors realize building a sense of for the learning outcomes (NLLP, 2016). Developing a community becomes a parallel stream to the content being explore in online learning. However, all components of the learning process should have contracts to incur in the online learning process, moreover, the lecturers spend time providing online instruction and the system incurs an opportunity of the hours, share,

messages, comments, and resources. The institution or campus should establish its website to make it secure and safe (Fasouli, 2014). To develop communication online with the learner is to engage between the lecturer with the learners. The member of the faculty needs to be in the circle of communication online. By having the communication online all the members can communicate well, understand and clarify the communication if possible and engage in the community of campus (Anderson & Rainie, 2018). The campus needs to discover the website to get the communication in learning better. The infrastructure of the platform will be open-source for managing the web to build on a distributed data store. The system provides flexible data for storing and managing raw content and extracted to be knowledge (Evans, 2011); (McLuhan, 1967); (Lall & Teubal, 1998). The integration with other systems provides a powerful tool for analytics and data processing. A description of services that provide temporary search and interactive visualization based on a topic model that allows users to explore archived content (Schwab, 2015).

CONCLUSION AND SUGGESTION

It is concluded that the most important thing in technological determinism is having knowledge of education technology, having a belief to change and adopting technological change. The new literacies are new knowledge of the Internet. With four communications of knowledge, the lecturers, staffs, lab tech, students are able to use the changes and new literacies. Especially for lecturers and students, the learning process is used accordance with technology which is easily accessible, upload and download the material, all the learning is on the website without missing the contents. The students can access learning without coming to the class. For staff, the communications are accessible without missing any information. And for the lab tech will change the way of work by giving the news or instruction on the website and all the members of campuses will find the news on the web.

Technological change, new literacies and the learning process on the web give an impact on future learning. The novelty of this research meets the dynamical shifting needs of the future connected in all components. The belief of a technological change in the principal initiator of

society's transformation or technological determinism changes society. The technological change needs innovation for future learning which all the learning understands and established the new media. The most important of the changes in the policy from the institution. Technological change is changed the whole systems such as literacies with emoticon which will shorten the message. As the systems are changed, the new literacies and the learning process will be run for 24 hours and the learning is never-ending. It will be all the time and in real-time. With the infrastructure of the institution in making its website, the learning process for future learning is ready for learning in 21st – century future learning.

As it is well known that entering the future learning 4.0 Industrial Revolution, all lecturers, staffs, laboratory technicians, and students must be able to adopt technological change, thus all campuses must meet the needs of infrastructure technologies. All needs in technological change must be met such as training, internet provisioning in the classroom or for members of campuses. In addition, the new literacy used in communication must be mastered by all member campuses. However, new literacies have changed the way of communication such as reading, writing, speaking and listening on the Internet. In the learning process, lecturers and students must comply with existing regulations in e-learning. So learning can take place well. Therefore, entering the industrial revolution 4.0 all involved in it must be able to keep up with technological changes so as not to lag behind and stutter technology. Moreover, technological determinism, new literacies and learning processes for future learning 4.0 Industrial Revolution can be run well and are able to enter the 21st century learning.

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