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21st Century English Learning: a Revolution in Skills, Critical Thinking, Creativity, and Visual Communication

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A B S T R A C T

Critical thinking and problem-solving, creativity and innovation, communication, and teamwork are some of these 21st-century abilities. It is possible to build these 21st century skills in any discipline. It is highly appropriate to study English as a subject in order to gain 21st century skills. To effectively and efficiently accomplish learning objectives, chemistry instructors must deliberately cultivate these 21st century competencies. Teachers can use scientific learning models, such as project-based, problem-based, discovery, or design-based learning models, to help students acquire the English language abilities they need for the twenty-first century. To help students gain 21st century abilities, these learning models must be applied as best as possible, adhering to the principles of the scientific method. The evaluation of 21st century abilities and the use of blended learning are also crucial.

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INTRODUCTION

Many terms are used to describe the 21st century, including the industrial revolution 4.0, globalization, the century of knowledge, the century of information technology, and the century of knowledge-based economies. Every area of life in this century is changing at an extremely fast and unpredictable rate, including the economy, transportation, technology, communication, information, and other domains. If used wisely, this rapid change can present opportunities, but it can also be catastrophic if not foreseen in a methodical, organized, and quantifiable way. Social media in particular is one area of information technology where change is happening quickly. Recently, careless people have begun using this social media platform to disseminate fake news and hate speech (hoaxes).

One strategy to combat incorrect information propagated on social media is critical thinking. On the other hand, a superior product cannot be produced by one person, but is produced through the collaboration of many parties. One cannot possibly produce a superior product because one cannot be an expert in all fields. Therefore, collaboration of several people or work units is very important. Another skill that is no less important is communication skills. A person who can effectively communicate his ideas to others is said to have high communication abilities (Alex., 2019; Alfoudari et al., 2021). This communication skill is the most important soft skill that is currently available (Zhang, 2020; Zhang & Chen, 2021).

Conversely, Robles (2012) asserts that the two most crucial soft skills for employees to succeed at work are communication and honesty. The four fundamental 21st-century skills—critical thinking and problem-solving, creativity and invention, teamwork, and communication—as well as technology, information, and communication literacy must be acquired. When choosing, analyzing, assessing, synthesizing, and applying information, a person's literacy is crucial. There is a great deal of information out there in the twenty-first century, much of it untrue. Lack of information literacy will cause us to be "consumed" by potentially harmful false concerns.

However, in the digital age of today, technological literacy is being able to interact using technology. The 21st century skillset encompasses all the abilities required to effectively navigate obstacles, a life that is becoming more intricate and unpredictable, and to excel in both personal and professional spheres (Kessler, 2018; Liu et al., 2019; Saini & Goel, 2019). These are not abilities that are innate; rather, they are learned through practice, education, or life experiences. It will be more successful to prepare human resources with 21st century skills through educational channels. Government modifications have been made to the curriculum.

The 2013 Curriculum has been adopted at the lower secondary school level with a number of improvements. In fact, 21st century skills have been incorporated into the 2013 curriculum in terms of content standards, process standards, and assessment standards. For instance, educators are expected to apply learning using a scientific manner in the process standard. The issue is that teacher-centered learning still accounts for the majority of learning that

takes place. Thus, students are unable to acquire 21st century abilities in the best possible way. Therefore, learning reforms that shift from educator-centered learning to learner-centered learning are the answer to efforts to develop 21st century skills in learners. English lessons learn about language components, language rules, language use, and management systems in the learning process (Afini et al., 2023; Agustinasari et al., 2022; Hidayad, Agustin, et al., 2023). In English learning is learned about how to build direct communication with speakers. How to raise awareness of foreign language learners to study it seriously so that it will be very useful for their future. In addition, the learning component which includes four skills (Listening, speaking, reading and writing) must really understand so that when implementing it in the midst of the community can be good (Bonar Siagian & M Bambang Purwanto, 2023). With the characteristics of English learning as outlined above, English subjects are excellent as a tool for developing 21st century skills.

LITERATURE REVIEW

A. 21st Century Skills

Everyone needs to acquire 21st century skills in order to succeed in overcoming obstacles and advancing their life and profession in this day and age. 21st century talents have been defined by several organizations. All of the definitions combined, from various organizations, are essentially the same. 21st-century skills are referred to as "The 4Cs" by the National Education Association (n.d.).

"The 4Cs" stand for cooperation, communication, creativity, and critical thinking. According to Ratnasari (2019), critical thinking abilities are the capacity to carry out a variety of analyses, assessments, evaluations, reconstructions, and decision-making processes that result in logical and reasonable behaviors. Through analysis, assessment, and reconstruction exercises, the topic, substance, and problem are considered (Hailikari et al., 2022). The ability to create new, original things that solve problems in novel ways and include coming up with fresh, diversified, and original ideas is what is known as creativity (Kapoor et al., 2020). The ability to convey new concepts, ideas, information, or knowledge both orally and in writing is known as communication abilities. Effective teamwork, respect for the differences among team members, fluency, and willingness to make the judgments required to accomplish shared objectives are all examples of collaboration skills (Dede, 2008; Schleischer, 2015). In the meanwhile, four categories are used by Assessment and Teaching of 21st Century Skills to group 21st century knowledge, attitudes, values, and ethics (Sahlberg, 2007). To start, there are various methods to think, such as critical thinking, creativity and innovation, problem solving, decision making, and metacognition, or learning about learning. Second, methods of operation involve cooperation, teamwork, and communication abilities. Third, general knowledge as well as communication and information technology literacy are instruments of the trade. Fourth, being a global citizen involves civic

engagement, a successful life and work, social and personal obligations, and cultural knowledge and awareness. The Partnership for 21st Century Skills has identified the 21st century skills that graduates will need in order to succeed and compete in the 21st century (Elwood & MacLean, 2009). This skill can increase marketability, employability, and readiness for citizenship.

B. Key Subjects and Themes of the 21st Century

For all learners in the twenty-first century, mastery of the key subjects and themes is crucial. English is one of these core subjects, along with the arts, math, science, economics, geography, history, citizenship, and government. In addition to mastering the core courses, students must also grasp the academic material at a deeper level by mastering the interdisciplinary issues of the twenty-first century. The following is an explanation of these transdisciplinary themes:

- Global consciousness
  In order to be globally aware, one must: (1) use 21st-century skills to comprehend and address global issues; (2) learn from and collaborate with people from diverse cultures, religions, and lifestyles in an atmosphere of mutual respect; and (3) engage in dialogue in personal, professional, and community contexts. Understanding other countries and cultures involves using non-English languages; being financially, economically, and business literate; and being an entrepreneur. (4) be able to make responsible financial decisions for themselves, (5) comprehend the function of economics in society, and (6) employ entrepreneurial abilities to boost output and career options,
- Environmental literacy
  Environmental literacy comprises the following: (1) demonstrating knowledge and comprehension of the environment and the factors that affect it; (2) demonstrating knowledge and comprehension of the impact of society on nature; (3) researching, analyzing, and drawing appropriate conclusions about effective solutions to environmental problems; and (4) taking both individual and group action to address environmental challenges.
- Civic literacy
  Participating actively in civic life to learn about how governance functions, exercising civic rights and obligations locally, nationally, and internationally, and comprehending the local and global effects of civic decisions are all examples of civic literacy.

C. Learning Outcomes of 21st Century Students

- Communication and collaboration
  To enhance and maximize creative pursuits, creative thinking entails: (1) applying a variety of broad concept development approaches; (2) producing new ideas; and (3) elaborating, analyzing, and assessing one's own ideas. When working creatively with others, one must: (1) develop, implement, and effectively communicate new ideas to others; (2) think freely and responsively to fresh perspectives; (3)

generate originality and novelty in the work and recognize the boundaries of embracing new ideas; and (4) see failure as a teaching opportunity. When applying innovation, creative ideas must be put into practice in order to produce real, beneficial impacts.

- Critical thinking and problem solving
  Using a variety of reasoning techniques—both deductive and inductive—that are suitable for the circumstances is part of effective thinking. In order to create products, systems thinking entails examining how various components interact inside complex systems. One must (1) effectively analyze and evaluate arguments, evidence, claims, and beliefs; (2) analyze and evaluate alternative viewpoints; (3) synthesize and make connections between arguments and information; (4) interpret information and draw conclusions based on the best analysis; and (5) critically reflect on learning processes and experiences in order to make considerations and decisions. In order to solve difficulties, one must first solve unusual challenges. Secondly, one must recognize problems and formulate questions that shed light on many viewpoints and lead to improved solutions.
- Effective communication encompasses the following: (1) using oral, written, and nonverbal communication skills to articulate thoughts and ideas in a variety of forms and contexts; (2) listening skillfully to comprehend meaning; (3) using communication for a variety of purposes; (4) utilizing a variety of media and technologies and evaluating their impact; and (5) communicating effectively in a variety of environments. Working well and appreciating the contributions of each team member are two aspects of collaborating with others. Other traits include being adaptable and willing to make concessions in order to accomplish shared objectives, taking ownership of collaborative work, and appreciating the contributions of each team member.
- Information, media and technology skills
  People who live in the age of media and technology are known for their capacity to collaborate, change quickly in response to changes in media, technology, and information, and have easy access to a wealth of available knowledge.
- Technology, information, and communication literacy (ICT)
  In order to effectively implement technology, one must: (1) use it as a tool for idea investigation, organization, evaluation, and communication; (2) use social networks, digital technologies, and communication tools appropriately to access, manage, integrate, evaluate, and create information; and (3) comprehend the ethical and legal issues surrounding information technology.

METHODOLOGY

The technology behind the so-called "smart classroom," which uses artificial intelligence to augment instruction, is explained in this study. In particular, the significance of smart classrooms, their features, drawbacks, and definition. An intelligent approach to teaching and learning for students is the "smart classroom." Using a projector, it features a display of historical mixed-media introductions (Hidayad, Umar, et al., 2023). Figure 2 depicts the cloud computing communication route that serves as an intermediary link between each classroom's teachers and the virtual meeting with students at home.

RESULT AND DISCUSSION

RESULT

21st Century Learning Model

The learning model of the twenty-first century is not new. The learning models of the twenty-first century are learner-centered. According to the 2013 Curriculum, learning with a scientific approach is required to be applied. Through this learning process, students are conditioned in an environment that fosters communication, cooperation, creativity, and invention, as well as critical thinking and problem-solving abilities. These four abilities belong to the 21st century. Students must also possess information literacy, media literacy, information and communication technology literacy, content understanding, and scientific attitudes in addition to these four competencies. The capacity for change adaptation, initiative and self-direction, social and intercultural competence, productivity and accountability, and leadership and responsibility are other traits that can be cultivated through scientific learning (Marisya et al., 2023; Nasar et al., 2023; Purwanto, Hartono, et al., 2023). All these 21st century learning outcomes will be developed during learning only if educators carry out learning with a scientific approach appropriately and correctly. The following describe some learning models with a scientific approach that are able to develop 21st century skills.

Discovery Learning Model

A learning model that takes a scientific approach is the discovery learning model. (1) Stimulation, (2) Problem Statement, (3) Data Collection, (4) Data Processing, (5) Verification, and (5) Generalization are the steps in the discovery learning process (Ramdhani et al., 2017).

Project-Based Learning Model

One learning paradigm that alludes to constructivism is the project-based learning model. Students' activities indirectly increase through projects they complete since they are able to put their knowledge and abilities to work. This project-based learning approach places greater emphasis on ideas that provide students the chance to work independently and engage in problem-solving activities (Purwanto, 2023). The project-based learning approach consists of the following steps: (1) formulating fundamental inquiries; (2) creating project plans; (3) creating timetables; (4) keeping track of students' and projects' development; (5) analyzing test findings; and (6) appraising experience (Umar et al., 2023).

Problem-Based Learning Model

The curricular model known as "problem-based learning" makes use of problems. A few characteristics of issues include: (1) being grounded in reality; (2) being intricate and disorganized; (3) being open-ended; (4) encouraging collaboration; and (5) building on prior experiences. A problem-based learning approach has five basic phases. The steps are as follows: (1) introducing students to problems; (2) setting up the classroom; (3) supervising both individual and group investigations; (4) creating, presenting, and displaying works (artifacts); and (5) assessing and assessing the process of solving problems (Purwanto, 2021; Purwanto, Despita, et al., 2023).

Design-Based Learning Model

According to Darling-Hammond (2008), students enrolled in the design-based learning paradigm are required to design or construct an artifact that requires them to apply the knowledge and principles they have learned. In the fields of technology, art, engineering, architecture, and science, design-based learning approaches are frequently used. In these contexts, students are expected to come up with concepts, create prototypes, and test their inventions. The findings demonstrated that compared to students who received traditional instruction, those who engaged in the design-based learning methodology demonstrated a superior systemic awareness of the components and operations of the system (Haladyna et al., 2002; Haladyna & Downing, 1989).

DISCUSSION

All instructors must ensure that all students, especially those studying chemistry, acquire 21st century abilities. The development of these abilities requires purposeful work that involves creating a design that is precisely on target. It cannot be accomplished without a planned, methodical effort. We are aware that the talents needed for the twenty-first century are learned via experience rather than innate abilities. Thus, educators' job is to design learning such that students can be trained in every facet of those 21st century abilities. The actions that instructors can take to help students acquire 21st-century learning skills are described below. To get students learning, start with unstructured, open-ended problems. An open-ended problem is one that does not have a predetermined solution, but rather multiple alternative answers are very likely.

When using the discovery learning paradigm, for instance, teachers may provide students with less difficult issues to solve in order to prevent them from being stimulated to think critically and creatively. When they ask questions, students ask generic inquiries instead of probing queries that direct them to investigate throughout the data collecting phase. Students in this situation are not given the opportunity to practice honing their critical and creative thinking abilities. Students did work in groups during the data collection period, however not every group member performed at their best.

In the group, only a few of students are actively working and thinking; the majority of students are more likely to wait and give their buddies the

results. This also holds true for data analysis and association, verification, and generalization by learners. Not every student participates in talks with excellent teamwork and communication. Only intelligent learners have the upper hand in communication. This is intrinsically linked to educators' management of learning roles. Teachers should design their lessons so that students can communicate clearly and function successfully in teams. As a result, the process of discovery, or the creation of knowledge, cannot proceed as best it can. It follows that developing 21st century talents cannot be done to their full potential. Few students may be able to acquire 21st century abilities, and even then the number is very limited.

On the other hand, incompletely structured problems are those that lack a clear structure. In other words, not all information is there in the issue. These unstructured, open-ended tasks help students hone their critical and creative thinking abilities. Assign students to work together to solve difficulties. Collaborative problem solving helps students to strengthen their collaborative abilities. Help students come up with research questions and, if necessary, hypotheses. Students will learn how to think critically and creatively by answering these probing questions. Give students the task of gathering data from various sources.

Information can also be obtained from research journals, newspapers, radio and TV broadcasts, specialists, the internet, and other sources in addition to books and teachers. We are aware that the world's largest library is located on the internet. For this reason, in order to solve problems, pupils must be able to access, analyze, evaluate, choose, and apply the information. Additionally, learners need to be able to assess the reliability of various information sources. Students are encouraged to practice acquiring information literacy as a result of this condition. Students have used technology inadvertently by gathering information from online sources (Astirini Swarastuti et al., 2024; Dacholfany et al., 2024). This indicates that students have worked on improving their digital literacy. When obtaining knowledge from diverse sources, students collaborate in groups. When working in teams, learners need to share tasks and roles so that the information or data obtained is complete and accurate. In addition, communication skills are also trained by learners when they discuss information or data collected.

Give students the task of analyzing the gathered facts or information. Through this data analysis exercise, students get practice in critical thinking, creativity, cooperation (teamwork), and communication. Give students the task of expressing their solutions to problems both orally and in writing. When students communicate their solutions to problems both orally and in writing, they are practicing critical thinking, creativity, teamwork, and communication (Bambang Purwanto & Hidayad, 2022; Marisya et al., 2023; Purwanto, 2024). When offering problem-solving solutions, comprehending discussion issues, and answering queries, critical and creative thinking abilities will be honed. Learners also exhibit cooperation (collaboration skills) when answering questions. Assign students to use technology in sharing the solutions to problems they have solved. This trains students to develop technology,

information, and communication literacy. Implement blended learning. Blended learning is learning that combines face-to-face learning and online learning. In face-to-face learning, one learning model with an appropriate scientific approach can be chosen. Meanwhile, online learning can be used MOODLE, Google Classroom, Edmodo, and others (Isisag, 2012; Pedulla et al., 2003; Rozgiene et al., 2008).

Students can acquire critical thinking and problem-solving abilities, creativity and invention, teamwork, communication, and technology, information, and communication literacy through blended learning. Assessing 21st century talents involves conducting genuine assessments. Teachers must evaluate every task students complete, from posing probing questions to gathering solutions to problems.

CONCLUSION

Everyone needs to have a strong grasp of 21st century abilities in order to function in today's world. 21st century talents have been described by numerous organizations. Nonetheless, the same ideas are present in each of these definitions. At the very least, critical thinking and problem-solving abilities, inventiveness and creativity, teamwork, and communication are 21st-century skills. Learners need to become proficient in these areas in order to meet the challenges of the twenty-first century. Teachers can help students master these skills by redesigning the way that learning occurs. The 2013 Curriculum's need for learner-centered or scientific learning provides the solution to the issue of how to help students acquire 21st century abilities. The following are a few learning models that use a scientific approach: problem-based learning, project-based learning, design-based learning, and discovery learning. However, the learning model has not been applied to its full potential in practice. This is evident from the subsequent issue. While some teachers have created lesson plans with a scientific approach to learning, when it comes to putting those plans into practice, teachers tend to provide students more opportunities to construct knowledge by explaining the material rather than giving them as much freedom as possible. Another issue is that, although using a scientific approach to apply learning in line with RPP, educators' application of the learning has not entirely complied with the guidelines of the scientific approach, such as the problems posed are still more in the form of closed-ended and well-structured problems.

ADVANCED RESEARCH

The following are some actions that should be taken to maximize the application of learning models in a scientific manner. These efforts include: (1) using unstructured and open-ended problems; (2) problem-solving cooperatively; (3) helping students develop investigative questions and formulating hypotheses (if necessary); (4) giving students the task of gathering information from multiple sources, including the internet; (5) conducting cooperative analysis of information or data; (6) using technology to

communicate the results of problem-solving in writing and orally; (7) implementing blended learning; and (8) conducting assessments of 21st-century skills.

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