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Trends Of Accounting Educator Profession: Its Role in Light of Contemporary Accounting Education

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ABSTRACT

Research is valuable because it can be used to analyze how the accounting educator profession has changed over time and to identify strategies for re-consolidation and reformulation as well as education and training to address current issues. The modernization of the workplace demands that accounting education keep up with these developments. This can be achieved by introducing modifications to accounting curriculum programs and learning strategies that rely on the use of a survey questionnaire with the above-mentioned purpose in mind. Several conclusions have been drawn from the samples of university teaching staff members; among them is the fact that calls for the advancement of accounting education have grown as the field of accounting has developed. A profession's ability to do the tasks assigned to it depends critically on its continuing education options, and from there, the trends in accounting education that are pursued are crucial to the profession's growth and continuation.

INTRODUCTION

An educator accountant is an accountant who is in charge and responsible for education, teaching, research, development and curriculum preparation in the field of accounting through universities and other educational institutions. The professional accountant profession was born from an integrated education system between theoretical, technical and analysis. The accountant profession is required to have the ability and accuracy in producing quality and transparent financial reports in accordance with generally accepted rules or regulations. In addition, accountants are also required to have qualifications or analytical and professional skills.

The movement in the dynamic business environment and challenges from the industrial revolution require the accounting profession to be responsive in dealing with change. But on the other hand, there are still resources that are less ready to accept change. So that accountant educators have an important role in producing accountants who are ready to use in the era of the industrial revolution. The accountant profession is a profession whose contributions are needed in all industries.

According to the Indonesian Accountants Association (IAI), there is a considerable gap between the availability of accountants in Indonesia and the needs of the accounting profession, where only 16,000 accountants are available from 452,000 personnel needed. The data shows that the achievement of the need for accounting personnel is less than 5%, which is only around 3.5% (Tampubolon, 2022). This happened because of the obstacles from the adaptation process of accountants during the modernization of digitalization. In dealing with these conditions, Burritt & Christ (2016) explain four steps that need to be taken in the world of education in creating accountants who are ready to face the digital revolution, namely awareness that the industrial revolution 4.0 and society 5.0 present new opportunities, development of a curriculum that is relevant to current conditions, development in terms of

human resources With the use of strict guidelines (extending out) to the data and information produced.

Information systems for accounting, planning, cost control, budgeting, and decision-making for both individuals and enterprises, taxation, auditing, solvency assessment, and compliance with current, efficient management are among the services offered by modern accountants. In this era, there is a change from conventional accounting to modern accounting. These changes will reduce costs and increase business transparency (Melnik et al., 2020). Tsiligiris & Bowyer (2021) in their research explain that the development of accounting education at universities is balanced with traditional skills and integrates new elements in accordance with industrial and technological changes.

Based on the results of a pre-research survey of 27 educators from 14 different universities, phenomenon were found regarding obstacles in the teaching and learning process for accounting students, namely the lack of student activeness due to being accustomed to learning methods that focus on Teacher Centered Learning, weak understanding of basic accounting so that it makes it difficult for students to intermediate and advanced accounting stages, apathetic student attitudes and low motivation to learn, students tend to depend on technology without any willingness to improve their analytical skills, facilities and infrastructure that are not optimal in supporting the learning process, low interest in reading among students, there are still educators who have not upgraded their knowledge in their field of study according to the needs in the world of work, the imbalance between curricular changes and technological advances with the readiness of students and lecturers in implementation.

Based on the description of the phenomenon above, there are three problem formulations raised in this study, namely: 1) The possibility of developing accounting education; 2) Current trends affecting accounting education; 3) Basic criteria for Accountant Educators in facing contemporary challenges.

LITERATURE REVIEW

The industrial revolution affects all aspects of human life including educational aspects, including in the field of accounting. The development of globalization affects the development of accounting in the international world, such as the global economy, multinational companies and foreign investment which has an impact on business transactions, implementation, measurement and disclosure of accounting in terms of scientific fields and accounting practices (Diaconu, 2007).

Accounting Educator

According to the International Federation of Accountants (IFAC), accountants are all fields of work that use accounting expertise, which include the field of accountants themselves including public accountants, internal accountants who work for companies or private companies, government accountants, and accountants as educators.

Accountant educator is a profession that produces human resources who have a career in the other three accountant fields. Teaching accountants carry out the process of professional creation, both the public accounting profession, corporate accountants and government accountants. Along with the rapid development of the economy, more and more accountants are needed. In the context of this problem, it is necessary to fulfill the need for teaching accountants (Merdekawati & Sulistywati, 2011).

Accountant Profession

Based on the development of the accounting profession, the use of big data, artificial intelligence, start-up businesses, and their application in the business world affect the development of accounting in the future (Özdoğan, 2017). Along with its development, accounting as a business management tool, is able to restructure the scientific field of accounting into an entity. This includes technological developments that change the form of accounting in the application and use of accounting in practice.

The development of the accounting profession is in line with the types of accounting services required by society which are increasingly complex. Accountants have a big role to play in improving the transparency and quality of financial information for the realization of a healthy

and efficient national economy. There is no process of accumulation and distribution of economic resources that does not require the intervention of accountants. Accountants play a role in all public, private and non-profit sectors (IAI, 2019).

Contemporary Issues in Accounting

The evolution of accounting theory There have been four phases in the history of accounting: the third step being the information system stage, followed by the technical or professional stage, the academic stage, and the academic stage once more, and the social responsibility stage in the fourth.

At the technical or professional stage, accounting focused on financial records and transactions. In the academic stage, interest in accounting is described as a science and social science that encourages academics to establish rules and foundations for preserving capital and the difference between income and capital, the second is the emergence of joint stock companies and the separation of management from capital owners, in addition to implementing widely established accounting standards. The accounting paradigm has evolved to include managerial accounting as well as quantitative and statistical techniques to give management relevant data for decision-making during the information systems stage (Al Dulamy & Hamadi, 2022).

Possible Development of Accounting Education

Industrial revolution The industrial revolution is one of the factors that have an impact on the development of education, one of which is accounting. The development of accounting education today must be able to adapt to the changes that exist, so that the quality of Accounting learning will be more effective. Accounting education is seen as an organized process carried out by those responsible, especially universities, and through this process, learners are provided with the basic knowledge and necessary scientific and practical abilities that enable them.

The importance of accounting education stems from the importance of accounting and the benefits it can provide to the society in which it operates which is seen from contributing to the preparation and qualification of accountants by providing a variety of accounting knowledge, preparing accountants who work in various fields of the economy in accordance with the development of the accounting profession, providing training and problem solving for current issues in the economic field, contributing to the development of the accounting profession by developing science and curriculum in accordance with the times (Bou, 2017).

Recent Trends Affecting Accounting Education

The rapid development of information technology has a major effect on the development of education in Indonesia, including in the field of accounting. There are many factors that influence accounting education, as explained by the International Accounting Education Standards Board (IAESB) (2014), there are several factors that influence accounting education programs, namely 1) personal factors related to ability, quality, motivation and effort; 2) environmental factors related to the surrounding scope of students; 3) educational programs of the accounting profession related to the nature of the program or competencies in completing the program; 4) work environment factors related to business and the desired role of an accounting professional in their field.

The industrial revolution affects the learning process and curriculum, Syamsuar & Reflianto (2019) state that there are several things that must be prepared in facing the changing era such as the preparation of a more innovative learning system to produce competitive and skilled graduates, especially in the aspects of data literacy, technological literacy and human literacy, policies or learning methods that are adaptive and responsive to change, preparation of responsive, adaptive and reliable human resources in the face of revolution, and development of facilities and infrastructure in all fields.

Basic Criteria for Accountant Educators in Facing Contemporary Challenges

Previous research results were conducted using theoretical inferences to measure the trend of future accounting issues. However, the need for dependent accounting research using databases, institutional knowledge and practices necessary to address the gap between

scientific studies and accounting practices, is one of the most significant challenges in accounting research (Arnold, 2009).

In the context of the Industrial Revolution 4.0, rapid technological changes, such as automation, artificial intelligence, and data analytics, can have a significant impact on the work of accountants. In the face of such challenges, the need for collaboration of traditional and modernized skills such as financial management and reporting remains important, but the need for new skills such as technological understanding, data analysis, creativity, and adaptability is also emerging (Burritt & Christ, 2016).

RESEARCH METHODS

This research is descriptive with quantitative data obtained from questionnaires distributed to respondents consisting of Educator Accountants from various PTN / PTS. The statement items submitted to answer the formulation of the research problem consist of: 1) The possibility of developing accounting education; 2) Current trends affecting accounting education; 3) Basic criteria for Accountant Educators in facing contemporary challenges. Each question item has a choice of Agree and Disagree answers which are interpreted in the form of a percentage amount on each statement. Table 2 below are the indicators and statement items proposed.

Table 1

Indicators and Statement Items

No.	Statements
Indicator 1: Possible development of accounting education	
1.	In Accounting Education there is a balance between theory and implementation (practice).
2.	Accounting application courses are not enough to fulfill the requirements for Accounting Study Program graduates to compete in the world of work.
3.	The education curriculum is not updated regularly.
4.	There is no coordination between institutions in the economy (related agencies) and universities to exchange ideas and opinions on what is currently needed in the world of work to improve the accounting curriculum..
5.	Graduates from accounting programs are prepared to meet the requirements for technical and analytical skill proficiency in accounting and auditing.
6.	The way accounting is now taught does not encourage students to use a variety of reference materials to solve accounting problems.
7.	Training techniques used today are outdated when it comes to cooperation and leadership development.
8.	Current education methods are not up to date in developing communication skills in the work environment.
9.	Accounting education assists in developing aspects of the accounting function, including financial reporting, administrative control, and auditing.
10.	The current educational curriculum does not help in obtaining graduates who are intellectually, technically, personally, socially, and organizationally proficient.
11.	The accounting education curriculum assists graduates in shaping professional ethics and behavior during the education program.
12.	Accounting education contributes to the improvement of accounting and financing practices, procedures, and financial policies.
Indicator 2: Current trends affecting Accounting Education	
1.	The technical or professional stage comes when accounting focuses on record keeping in the preparation of accounts.
2.	The academic stage, which dates back to the early 19th century is concerned with accounting as a social science.
3.	The advent of the Industrial Revolution and the increase in production and wealth helped and encouraged academics to establish rules and foundations for preserving capital and distinguishing between income and capital.

4.	The emergence of joint stock companies and the separation of management helped formulate assumptions consistent with the nature of joint stock company activities.
5.	The information system stage is considered a remarkable development in accounting thinking as managerial accounting, quantitative and statistical methods emerged as providers of useful data to management in the decision-making process.
6.	The emergence of social responsibility to the economy helps in the measurement and disclosure of cost-benefit for all groups (Stakeholders) in benefiting from accounting information.
7.	The significant changes and developments related to business have an impact on the development of various sciences and professions, including accounting.
8.	There is a balance between the dynamic nature of accounting and the ability to keep up with continuous change.
9.	The quality and development of the accounting profession is positively correlated with the quality of accounting education.
10.	Professional and academic development of accountant educators is interrelated and continuous.
Indicator 3: Basic Criteria for Accountant Educators in Facing Contemporary Challenges	
1.	Legislation: Speed of the review process that defines the patterns and information available in the financial statements that provide more useful information to users..
2.	Training: To integrate training programs for the accounting profession to provide basic knowledge related to the influence of information technology on work culture and its requirements to improve capabilities on financial information needs.
3.	Scientific research: in the field of accounting in universities and other entities related to contemporary challenges in dealing with the process of communicating financial information.
4.	Reorganization and strengthening of the accounting profession: initiated by studying the problems available and how to solve these problems.
5.	Conducting a review of the educational curriculum in accounting at universities aims to get motivation, understanding and development of information technology and the increasing needs of entity management.
Additional Indicators: Recommendations	
1.	Suggestion: What kind of education system is most effective based on the character of students in the Millennial era.
2.	Suggestion: Competency Improvement for Accountant Educators in the Digital 4.0 era.
3.	Educator Accountant Constraints in the Teaching and Learning Process.
4.	Phenomenon: The condition of PBM in your university environment.

Source : Al Dulamy & Hamadi (2022).

Based on table 2, there are additional indicators submitted to respondents as a basis for supporting the phenomena and discussion in this study.

RESEARCH RESULTS AND DISCUSSION

Respondents in this study were distributed to Educator Accountants from 19 PTN / PTS, and 91 questionnaires were filled in, as shown in table 1 below.

Table 2
Samples

No.	Universities	Respondents
1.	Bina Insani University	5
2.	Institut Bisnis dan Kompiyer Indonesia	3
3.	Politeknik Negeri Medan	7
4.	STIE Al Washliyah Sibolga	2
5.	STIE Mulia Darma Pratama	5
6.	STIE YKPN	2
7.	STMB Multismart	6

8.	UIN Syahada Padang Sidempuan	3
9.	UMN Al Washliyah	5
10.	Universitas Battuta	3
11.	Universitas Diponegoro	2
12.	Universitas Medan Area	8
13.	Universitas Methodist Indonesia	4
14.	Universitas Muhammadiyah Prof. Dr. HAMKA	3
15.	Univesitas Muhammadiyah Yogyakarta	5
16.	Universitas Khairun Ternate	3
17.	Universitas Mulawarman	3
18.	Universitas Panca Budi	3
19.	Universitas Sumatera Utara	9
20.	Universitas Terbuka	10

Source : Data Survey, 2023.

Based on the questionnaire data filled in, the following are the characteristics of the respondents shown in table 3.

Table 3
Respondent Characteristics

Description	Respondents	Percentage
Gender		
Male	31	34%
Female	60	66%
Educational		
Magister	85	94%
Ph.D	6	6%
Position		
Expert assistant	64	70%
Lector	25	28%
Head Lector	2	2%
Professor	-	-

Source : Data Survey, 2023.

Based on table 3, it can be seen that the respondents consisting of Educator Accountants, with a percentage of 34% male and 66% female, 94% with a Masters education level and 6% are Doctoral / PhD, as well as 70% are Expert Assistants, 28% Lectors and 2% Head Lectors.

Possible Development of Accounting Education

The survey results from the formulation of the first problem have 12 statement items relating to the development of accounting education, with a description of the respondents' answers as follows.

Table 4
Development of Accounting Education

No.	Statements	Agree	Disagree
1.	In Accounting Education there is a balance between theory and implementation (practice).	87.2%	12.8%
2.	Accounting application courses fulfill the requirements for Accounting Study Program graduates to compete in the world of work.	87.1%	12.9%
3.	The education curriculum is not updated regularly.	33.3%	66.7%
4.	There is no coordination between institutions in the economy (related agencies) and universities to exchange ideas and opinions regarding what is currently needed in the world of work to improve the accounting curriculum.	46.2%	53.8%

5.	Accounting education serves to prepare graduates who are compatible with the criteria for proficiency in analytical and technical skills in accounting and auditing..	97.4%	2.6%
6.	Current teaching methods do not motivate students to find solutions to accounting problems by using various reference sources..	38.5%	61.6%
7.	Current training methods are not up to date for leadership development and teamwork.	33.4%	66.6%
8.	Current education methods are not up to date in developing communication skills in the work environment.	30%	70%
9.	Accounting education assists in developing aspects of the accounting function, including financial reporting, administrative control, and auditing.	100.0%	-
10.	The current educational curriculum does not help in obtaining graduates who are intellectually, technically, personally, socially, and organizationally proficient.	32.5%	67.5%
11.	The accounting education curriculum assists graduates in shaping professional ethics and behavior during the education program.	100%	0.0%
12.	Accounting education contributes to the improvement of accounting and financing practices, procedures, and financial policies.	95.1%	4.9%

Source : Data Survey, 2023.

Table 4 explains that in the development of accounting education, generally accountant educators agree with the statement that there is a balance between theory and implementation where respondents who answered agreed by 87.2%, but on the other hand there are obstacles where accounting application courses alone are not sufficient to meet the requirements for accounting study program graduates to compete in the world of work where this statement is 87.1% of respondents agreed. While on the curriculum side, education in Indonesia has periodic improvements in accordance with advances in science and technology, this can be seen from the statement on the education curriculum not being updated regularly by 66.7% who answered disagree. Coordination and collaboration between institutions in the economy and universities to improve the accounting curriculum as many as 53.8% answered disagree and 46.2% agreed, so this shows that there has not been a maximum and evenly distributed achievement in all educational institutions in the field of cooperation between universities and practitioners in order to advance education.

Graduates in accounting and auditing are compatible in analysis and technical, this statement was agreed by almost all respondents who answered. For statements related to teaching methods, training and education have not been able to motivate students and are not up to date in developing skills in finding solutions to accounting problems, a percentage of almost 40% cumulatively agreed. All respondents agreed that accounting education can help in developing aspects of accounting functions such as financial reporting, administrative control and auditing. A total of 67.5% of respondents disagreed with the statement that the current education curriculum does not help graduates to be intellectually, technically and personality, social and organizational skills. All respondents agreed that the accounting education curriculum can help graduates in shaping professional ethics and behavior. Accounting education contributes greatly to the improvement of accounting and financing practices, procedures and financial policies, this was agreed by more than 95% of respondents.

Recent Trends Affecting Accounting Education

The survey results from the formulation of the next problem have 10 statement items related to current trends affecting accounting education, with a description of the respondents' answers as follows.

Table 5**Recent Trends Affecting Accounting Education**

No.	Statements	Agree	Disagree
1.	The technical or professional stage comes when accounting focuses on record keeping in the preparation of accounts.	83.0%	17.0%
2.	The academic stage, which dates back to the early 19th century is concerned with accounting as a social science.	87.8%	12.2%
3.	The advent of the Industrial Revolution and the increase in production and wealth helped and encouraged academics to establish rules and foundations for preserving capital and distinguishing between income and capital.	95.2%	4.9%
4.	The emergence of joint stock companies and the separation of management helped formulate assumptions consistent with the nature of joint stock company activities.	95.1%	4.9%
5.	The information system stage is considered a remarkable development in accounting as managerial accounting, quantitative and statistical methods emerged as providers of useful data to management in the decision-making process.	97.6%	2.4%
6.	The emergence of social responsibility to the economy helps in the measurement and disclosure of cost-benefit for all groups (Stakeholders) in benefiting from accounting information.	92.7%	7.3%
7.	The significant changes and developments related to business have an impact on the development of various sciences and professions, including accounting.	97.6%	2.4%
8.	There is a balance between the dynamic nature of accounting and the ability to keep up with continuous change.	95.1%	4.9%
9.	The quality and development of the accounting profession is positively correlated with the quality of accounting education.	95.1%	4.9%
10.	Professional and academic development of accountant educators is interrelated and continuous.	97.6%	2.4%

Source : Data Survey, 2023.

Table 5 shows that the technical stage of accounting which focuses on recording and preparing accounts is dominated by answers agreed by respondents, namely 83%. This is in line with the knowledge of the academic stage starting in the early 19th century relating to accounting as a social science which generally answered in the affirmative by 87.8%. The Industrial Revolution and increased production and wealth helped and encouraged academics to establish rules and foundations for preserving capital and distinguishing between income and capital answered in the affirmative by 95.2%. Joint stock companies and the separation of management that helped formulate assumptions consistent with the nature of joint stock company activities as much as 95.1% answered in the affirmative. For the information system stage, which is considered a remarkable development in accounting, because managerial accounting, quantitative and statistical methods appear as providers of useful data for management in the decision-making process, the dominant answer agreed by 97.6%.

The emergence of social responsibility for the economy helps in measuring and disclosing cost-benefit for all groups (Stakeholders) in benefiting from accounting information by 92.7% agreed. Significant changes and developments related to business that have an impact on the development of various sciences and professions, including accounting by 97.6%. For the balance between the dynamic nature of accounting and the ability to keep up with continuous change and the quality and development of the accounting profession is positively correlated with the quality of accounting education, each of them agreed as much as 95.1%. And the professional development of accountant educators professionally and academically is interrelated and sustainable at 97.6% of respondents answered in the affirmative.

Basic Criteria for Accountant Educators in Facing Contemporary Challenges

The survey results from the formulation of the next problem, which consists of 5 statement items related to the basic criteria that must be possessed by Accountant Educators in facing contemporary challenges, with a description of the respondents' answers as follows.

Table 6

Criteria for Accountant Educators in Facing Contemporary Challenges

No.	Statements	Agree	Disagree
1	Legislation: The speed of the review process that defines the patterns and information available in the financial statements that provide more useful information for users.	95.1%	4.9%
2.	Training: To integrate training programs for the accounting profession to provide basic knowledge related to the influence of information technology on work culture and its requirements to improve capabilities on financial information needs.	97.5%	2.4%
3.	Scientific research: in the field of accounting in universities and other entities related to contemporary challenges in dealing with the process of communicating financial information.	95.1%	4.9%
4.	Reorganization and strengthening of the accounting profession: initiated by studying the problems available and how to solve these problems.	95.1%	4.9%
5.	Conducting a review of the educational curriculum in accounting at universities aims to get motivation, understanding and development of information technology and the increasing needs of entity management.	95.2%	4.8%

Source : Data Survey, 2023.

Table 6 explains in terms of legislation, training, scientific research, reorganization and review of the accounting education curriculum. For the speed of the review process that defines the patterns and information available in the financial statements that provide more useful information for users, 95.1% of respondents who answered agreed. Then in integrating training programs for the accounting profession in providing basic knowledge related to the influence of information technology on work culture and its requirements to improve the ability to meet the needs of financial information, the dominant answer was 97.5% agreed. In scientific research in accounting, universities and other entities related to contemporary challenges in dealing with the process of communicating financial information and reorganizing and strengthening the accounting profession is carried out by initiating a study of the available problems and how to solve these problems as much as each has an agreed answer of 95.1%. In terms of conducting a review of the education curriculum in accounting at universities aimed at obtaining motivation, understanding and development of information technology and increasing the needs of entity management, 95.2% answered in the affirmative.

Findings and Recommendations

Based on the discussion that has been described, there are several recommendations given by respondents which can be summarized as follows:

1. Constraints of Educator Accountants in the Teaching and Learning Process; Students' understanding of basic accounting and analytical power is still low, there is an imbalance between the potential of educator accountants, the equipment / technology needed and the ability of students to receive learning. There are still many students who lack responsiveness and initiative in participating in learning, the tendency of students who rely more on automatic systems without any development of critical thinking. On the other hand, there are still obstacles due to changes in business demands that continue to innovate so that it is necessary to update the curriculum and learning materials that remain relevant to the demands of current accounting practices. Another obstacle is that there are still difficulties in teaching abstract and complex material regarding certain accounting concepts that may be difficult for some students to understand, so it is necessary to restructure the material to be easier to understand.

2. Education System; the most effective system applied based on the character of students in the millennial era is based on the balance between practice and theory by applying the Student Center Learning, Case Method and Project Based Learning methods. In addition, learning is flexible and oriented towards character building so as to facilitate students to learn independently and creatively and utilize technology as the main tool in the learning process.
3. Improving the Competence of Accountant Educators; Mastery of current issues in accounting, Digitalization of Accounting, attending training or seminars related to the competencies of the accounting profession, integration of technology into curriculum and teaching. All of these things are implemented by collaborating between universities and practitioners (business world and industrial world), as well as other institutions and associations such as the Indonesia Stock Exchange (BEI), Financial Services Authorization (OJK), Indonesian Accountants Association (IAI), Indonesian Accounting Lecturer Association (ADAI) and so on.

CONCLUSION

Based on the description of the results and discussion, it can be concluded that the curriculum and Educator Accountants are one of the success factors in producing prospective accountants who have multidisciplinary competencies, meta analytical abilities as well as adequate social skills. The development of current global issues requires the accounting curriculum to reflect the latest technological advances so that accounting education remains relevant for practice in the world of work and industry. Renewal of learning methods that implement SCL (Casemethod and Project Based Learning) integrated with the latest accounting issues and the role of the latest technology. Collaboration between theoretical and practical courses that are expected to produce classic skills, such as problem solving, critical and analytical thinking, decision making and evaluation, as well as understanding of accounting principles (double-entry bookkeeping) and technological capabilities such as big data, data analysis, dynamic business analysis, and blockchain technology.

Curriculum design that is integrated with technological issues and developments is able to produce future accountants with critical skills, pragmatic mindset and high interpretation ability to focus equally on data generated from company finances, and strategic plans, as well as big data generated from other sources to be able to assess the risks and opportunities of the company's future to achieve sustainable strategic goals. In addition, agility, the ability to create and maintain networks through social skills and appropriate technical skills are important elements that exist in accounting education today. Finally, human knowledge that can be used to assess customer and competitor behavior and the ability to solve problems in real-world applications are knowledge features that future accountants need to possess. One aspect that educators should include in the syllabus and general curriculum is scenario planning cases that allow the simulation of different outcomes and the application of knowledge gained to solve authentic problems, where the educator takes on the role of observer and advisor, allowing students to learn through application and through making mistakes that they must correct before completing the exercise. Various cases have also been suggested for practicing technological developments, such as big data analysis.

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