

Innovation In Surveying Education: A Tale From Two Regions

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SUMMARY

The article which is a desktop research presents the perspective of developing countries conquering new frontiers being part of the central theme and a major focus on the study of innovation in surveying education. In response to this, innovations in surveying industry emanates as a result of the fourth industrial revolution which are and not only mobile mapping which is on the increase, the internet of things, 5G communications, Machine learning & Artificial Intelligence, Building / Big data and Distributed ledger technology. The objective being that innovation in surveying education has been determined by factors like globalisation, sustainable development, technological development and micro-economic reforms. The developed countries are currently leading on the innovations while the developing countries are following the innovations. As a result, change is constant; and the need to promote uniformity and educational based inclusivity in surveying curriculum to capture the core interests in innovation to benefit the developing countries. In conclusion the purpose is to unify innovations in surveying education globally, so that countries that meet the criteria will have no limitations to interchange knowledge based learning and exchange in workforce. Competence, hard and soft skills with proven character should be the focus of the educational based inclusivity. The significance of the study suggest that developing countries needs to conquer the new frontiers created by the opportunities in innovation in surveying education and benefit from the products that span from interchanging adequate knowledge, curricula, skills and labour market. It will further improve out-sourcing whenever there is opportunities and confidence within the surveying communities.

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1) INTRODUCTION

There are visible technological innovations happening in the Surveying Industries. UAVs and drones is one of the innovations happening in the field of surveying technology. Unmanned aerial vehicles (UAVs) and remote-controlled drones are being used by surveyors and cartographers more frequently now. Numerous surveying-related industries, including geospatial surveying and mapping, scanning, building surveying, environmental monitoring, and agricultural, all have numerous potential use for the technology. Modern drones allow surveyors to collect data rapidly and precisely. UAVs also make the task safer by removing the requirement for human operators to enter dangerous places to conduct measurements. The notable benefits includes and not only to

- 1) Cover huge surface regions in a short measure of time
- 2) Cross troublesome landscape
- 3) Creates possibilities to access difficult and inaccessible terrains.
- 4) Consolidate land overviews, photogrammetry, 3D planning, and geographical studying.

Even though the technology is becoming more adaptable and beneficial, it is still important to keep in mind the core legal framework for action if assessors are to try to avoid breaking the law.

The Process involves being mindful of the relevant working regulations, giving clients competent results while obtaining the proper levels of preparation and evaluations.

Another excellent advancement in the surveying sector is cloud computing. Regarding the cloud, learning is a slow process. Massive record sizes and intricate informational processes have made it difficult to communicate cloud innovation. However, the barriers preventing the usage of cloud services are diminishing with the introduction of 5G and general updates to cloud infrastructure. But when 5G is introduced and the cloud infrastructure is generally improved, the barriers to using cloud services are steadily being reduced. The change over the next couple of years will be the acceptance that the true standouts of research data that constrained cloud use have really transformed into reasons to implement contemporary cloud innovation. Cloud technology is the best tool for managing huge and complex datasets, as long as you don't overtax the cloud's entry capabilities. Particularly in terms of handling point clouds, the cloud offers stunning potential consequences to hasten enrollment and lower expenditures. Proficiency is also increased when combined with 5G.

Vercator being an expert in developing artificial intelligence-enabled recruitment software that eliminates manual oversight and enables assessors to take use of flexible parallel processing using distributed computing to handle large datasets.

Information may be exchanged as soon as it is discovered, the line separating the office and the field is blurred, and in-field recruitment is started straight immediately. Site visits are reduced, and remote cooperation is made easier, two factors that are crucial during the "social separation" era. All of this is in spite of a greater ability to coordinate and communicate information across many expectations. It can be challenging to translate information into

something meaningful when there is no normalization taking place when coordinating it. This is especially true when different undertaking clients have varying requirements for the information they need and how it should be presented to suit their demands.

Knowing what data to contribute can help you achieve a successful information yield. In order for the situation to truly work and emotionally helpful network based cooperative working. There is need to have the choice to prompt clients on the proper information prerequisites.

Mobile mapping, another fantastic breakthrough in the survey sector, has gone through a number of iterations. The ideal scenario is to put up an instrument in the field and leave it to make all of the estimates by itself.

Planning tools that are portable come close to fulfilling that objective. Frameworks can be used as a cell phone. They use either cameras or laser scanners to filter the indoor environment. Informational indexes can be coloured using cameras and laser scanners, and they are georeferenced.

The ability of these 3D portable planning frameworks to quickly protect output data is a key advantage. They are flexible and allow one create 3D models from a variety of different scenarios. With this planning innovation, indoor, outdoor, and subsurface areas can all be captured.

Even though this cycle isn't nearly as precise as regular LiDAR, an invention will unquestionably play a vital role in ongoing applications and is likely to improve in precision and quality with time. The first step in putting portable 3D reality catch technology to use is to consider creative applications for it. The importance of considering the LoD (level of

detail) required for specific tasks and using the optimal tools for the job has increased due to the availability of additional options for the result of the examination.

Consideration should be given to using many devices at once. Continuous, real-time results are one of the most notable benefits of 3D portable planning. Reduce the amount of time it takes to receive results by quickly converting your data into 3D visualizations. Similar 3D-planning software will typically provide strong authoritative components as well, such as information packaging into projects and managing individual transfers accordingly.

Increased accessibility and integration is one of the newest technological developments in the surveying sector. In essence, evaluators have more opportunities to work more closely in a wider range of circumstances. Assessors must be flexible, eager to embrace innovation, and able to consider how abilities might be communicated in order to carry out this.

Assessors appear to be up for the exam. According to a recent RICS (Royal Institution of Chartered Surveyors UK) study on the impact of innovation on reviewing, • In two years, assessors have increased their use of innovation from 60% to 68%. (Ryan and Ployhart 2014). The percentage of people using computerized techniques has increased from 57% to 79% (Huang, Li, et al.2016). 95% of those polled agreed that innovation offers opportunities (Dahler and Frederiksen 2012). In a later RICS study, the following were seen as the main factors that would likely cause remarkable change:

- a) Normalizing innovation across the network of stores and enhancing the talent pool.
- b) Expanding the network of stores; concerted effort and
- c) Ensuring senior groups are committed to advancing the cause.

Practically speaking, two of the three of these unique impulses are focused on people rather than procedures. Managing and forming groups is frequently, one of the biggest obstacles to the successful adoption of new innovations. The benefits are also completely visible there. If you adopt new technology without also changing the way you operate, you won't learn very much from that endeavor.

The objective of the study emphasizes the factors explained below and contributes to the innovation in Surveying Education and inclusivity should be considered for the benefits of the developing countries.

1.1) Globalisation

Information Technology and communication technologies have made globalization a reality. Political, economic, cultural, and social events are more intertwined in a globalized world. Events in one area of the world increasingly have the capacity to affect individuals and societies in other parts of the world, according to the process. This is why deliberate efforts should be made to carry along the developing nations. Perspectives are widened by globalization from a local to a global scale. Along with a social, economic, and political component, globalization also has an educational component. The web is the most obvious illustration of this tendency, even though the web's full promise as a resource for education has yet to be realized. How successful is the educational resources in the developing nations?

1.2) Sustainable Development

The development of policies during the coming decades will be influenced by sustainable development. Sustainable development is the development that meets the requirements of the present without sacrificing the ability of future generations to fulfill their own needs and effectively combines economic, social, and environmental factors in decision-making. Particularly in Geomatics, multidisciplinary decisions are made that have a significant impact on national, regional, and local levels of government. It is hardly surprising that changes are occurring in the definition and nature of the surveying profession and practice when these global influences are taken into account. It is important to evaluate the effect of sustainable development in the developing nations to know where inclusivity is required.

1.3) Technological Development

It is the important driving force behind changing the fundamental nature of the geographical data environment. Innovation in Surveying Education technologically is faster in the developed nations, while in the developing nation; it is slow. The traditional research discipline has been changed by GPS estimation advancements, and the planning discipline will generally be changed by satellite symbolism. The GIS improvements for information to the executives, examination, and control dataset innovations for capability of huge informative sets appear to have the most impact on the geographic data environment. Additionally, as communication technology develops, spatial information will increasingly be reviewed and used. Since it is one of the determining factors of surveying education, efforts should be made for inclusion of the developing nations.

1.4) Micro-Economic Reforms.

The environment for geographical information has been significantly impacted by microeconomic reform in several nations. Initiatives for microeconomic reform represent the institutional and governmental aspects of the developments seen during the past 20 years. To assure service delivery and cost effectiveness, this encompasses programs like privatization, decentralization, downsizing, cost recovery, performance contracts, quality assurance, public-private partnerships, and other policies. With the help of these initiatives, the emphasis has shifted from purely technological problems to also covering the more management aspects of creating and maintaining national spatial data infrastructures.

2.0) LITERATURES

2.1) Innovation in Surveying Education

The research relevance is demonstrated by growing students involvement in the learning process, which occurs when students as well as academic staff and administrator work to enhance higher education institutions' operations and Educational Inclusivity (Razinkina et al., 2018). The main findings from a study of a broad cross-section of university-based surveying courses from various nations serve as the foundation for discussion. The relationship between education and the surveying sector is examined, as well as questions of curriculum and educational activity (Young et al., 2012).

2.2 Curricula in Surveying Education

To ensure that its graduates will be able to fulfill the changing needs of the business, higher education institutions need to get input on course curricula from professional groups and other industry stakeholders (Young et al., 2012, Stefanidis and Fitzgerald, 2014, Enemark, 2002).

2.3) Globalisation

Globalisation in education is due to competing technologies impact on innovations in Surveying Education (Thornley et al., 2014, Zajda, 2015). Globalization improves the capacity of students to get to, survey, take on, and apply information to think freely to practice fitting judgment and to team up with others to get a handle on new circumstances (Gift et al., 2021). The negative implication affects growing pay disparity and a worsening income distribution are also caused by unequal access to education. In industrialised nations, those who lack education and/or skills are at a significant disadvantage in the increasingly competitive global economy (Arshed et al., 2019).

2,4) Educational Sustainable Development

A sustainable future can be shaped by educating students for educational sustainable development (ESD), which aims to provide them with the knowledge, abilities, attitudes, and values they need to become globally responsible citizens. The three pillars of sustainability environmental, social, and economic concerns are all covered by ESD (Chen and Liu, 2020).

It facilitates the development of the values, information, abilities, and behaviours necessary to

build a sustainable world that ensures education, economic sustainability, and environmental protection (Rowe et al., 2013). The implication of Sustainable development strategies aid in a country's ability to adjust its growth to the problems posed, thereby protecting vital natural resources for current and future generations. It is predicted that there will be 9 billion people on the planet by the year 2050 (Rahimifard et al., 2013).

2.5) Technological Development

Technological Development has an impact on people's lives and alters how they learn, think, and communicate. It has a significant impact on society, and today it is difficult to picture living without it (Buckingham, 2013). Technology and society are intertwined, interdependent, and mutually influential. It helps educators to better fulfil the requirements of their pupils while also maintaining their own technology skills (Bennett et al., 2018).

2,6) Micro-Economic Reforms

The microeconomic theory of the demand for education examines how an individual makes decisions about different levels, types, and quality of education in order to maximise the benefits that result from those decisions (Council, 2011). It aids students in developing countries plans that improve output effectiveness and increase social welfare. Microeconomics shows how a capitalist economy, in which each unit is free to make its own decisions and functions (Ghavifekr et al., 2015).

3.0) STUDY CONTEXT

Professional education in Surveying has developed across the decades and technological input in the Geomatics industries has transformed from the analogue era to the digital era due to innovations like mobile mapping which is on the increase, the internet of things, 5G communications, Machine learning & Artificial Intelligence, Building / Big data and Distributed ledger technology. The fourth industrial revolution that started in the developed countries made it possible. The industrialized nation has championed and are taking leads leaving the developing countries behind. It calls for inclusivity of the developing countries to enable them follow the trend as close as possible. Most of the technologies are yet to get to the developing countries due to inadequate infrastructures and requisite technologies. The paper emphasizes on inclusive based education, curricula and adequate infrastructures in innovation of professional education across the developing countries.

4 CONCLUSIONS

The opportunity for the developing countries to conquering new frontiers has come. There is need for a quick collaboration of the surveying industry in the developing countries to project these challenges. It can be achieved by seeking education based inclusivity, curricula and adequate infrastructures. The FIG can utilize the opportunity to achieve one of its objectives by setting new standards for the developing countries. In order for countries that meet the criteria to freely share knowledge-based learning and workforce exchange. The goal is to facilitate developments in surveying education globally. The emphasis of educationally based inclusion should be on competence, hard and soft skills, and proven character. The study's

relevance suggests that developing nations must forge ahead to seize the new prospects and conquer new frontiers for measuring up in Surveying education innovation and reap the rewards of the products that result from exchanging suitable knowledge, curricula, skills, and labour market. When there are opportunities and trust among the surveying communities, outsourcing will be further improved.

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BIOGRAPHICAL NOTES

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