The Integration of Quintuple Helix Model Expectations in GRIT Program Assessment

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Abstract
Program assessment is highly useful for individuals to measure the progress, success, and impact of a program. However, there is not much scrutiny involving relationships between academia, industry, the public sector, civil society, and the natural environment. Therefore, this concept paper aims to enhance understanding, learning and existing knowledge regarding GRIT program assessment based on the expectations of the Quintuple Helix Model. This model encompasses all these environments systematically so that the effectiveness of a program can be evaluated. It helps determine whether a program meets its stated objectives and identifies any improvements needed. Additionally, program assessment involves a systematic process to evaluate program performance and provide information on its achievements, effects, and effectiveness. Program assessment implementation involves six systematic steps: preparing for data collection, collecting data, analysing data, reporting results, utilizing study findings, and revising. This paper focuses on challenges and strategies in implementing assessment besides anticipating the impact of GRIT program assessment based on the Quintuple Helix Model. Program assessment implementation is not always smooth and may involve several challenges. However, with appropriate strategies, these challenges can be overcome to ensure successful assessment. Among the challenges discussed are data collection challenges, time constraints, assessment instruments, and data management and personal confidentiality. Expectations of GRIT program assessment based on the Quintuple Helix Model covering academia, industry, the public sector, civil society, and the natural environment are also discussed. Those involved in the assessment need to work together to address these challenges and ensure that the assessment can be successfully implemented to provide valuable information for program improvement. Further research proposals that can be developed from this concept include enhancing the quality of program assessment involving more stakeholders and other environments besides those outlined in the Quintuple Helix Model.
Keywords: Program Assessment, Quintuple Helix Model, Systematic Assessment, Assessment Steps, Assessment Challenges.

Introduction

Program assessment involves a systematic process of gathering and analysing data. The purpose of collecting and analysing data is to make decisions about whether the ongoing or completed program has had a positive or negative impact. Assessment is also a process to determine the extent to which the objectives of a program are achieved (Tyler, 1950). Assessment is also interpreted as the process of collecting and using information to make decisions (Cronbach, 1963). Various definitions like these can be given depending on the different purposes of assessment, but the steps to implement an assessment remain the same.

Assessment Implementation Measures

There are six proposed steps for implementing systematic assessment. Evaluators can use these steps to assess any program with various objectives.

Prepare for Data Collection

This first step will ensure a successful assessment journey. Gathering quality data is a crucial step in conducting effective assessments. It opens the door to deep understanding, valuable information disclosure, and evidence-based answers. However, to achieve significant results, the need to prepare before the data collection process becomes highly important. Among the preparations to be made are managing ethical issues, developing a data management plan, conducting pilot tests, and writing an assessment plan.

Collecting Data

Collecting data can unveil the curtains on a quest for profound knowledge. It is a process involving the gathering, organization, and compilation of relevant and pertinent information related to the assessments made. In an increasingly interconnected and informed world, meticulous data collection becomes ever more crucial in shaping accurate assessments and addressing complex questions. Regular meetings among assessment teams, consistency, systematic approaches, and periodic training can ensure that the data collection process is carried out more systematically and gains a better understanding of the assessments conducted.

Analysing Data

Analysing data is an important process in uncovering the secrets and meanings hidden behind numbers. The ability to analyse and interpret information becomes increasingly valuable in an increasingly modern era. There are several powerful data analysis techniques and tools that can help us unravel patterns, trends, and hidden relationships in a dataset. The data collected can be analysed through quantitative or qualitative methods, and it can also be analysed through descriptive analysis or explanatory analysis. Figure 1 below shows the types of analysis for each data type. Strong data analysis can identify new opportunities, recognize trends, and make decisions based on strong evidence.
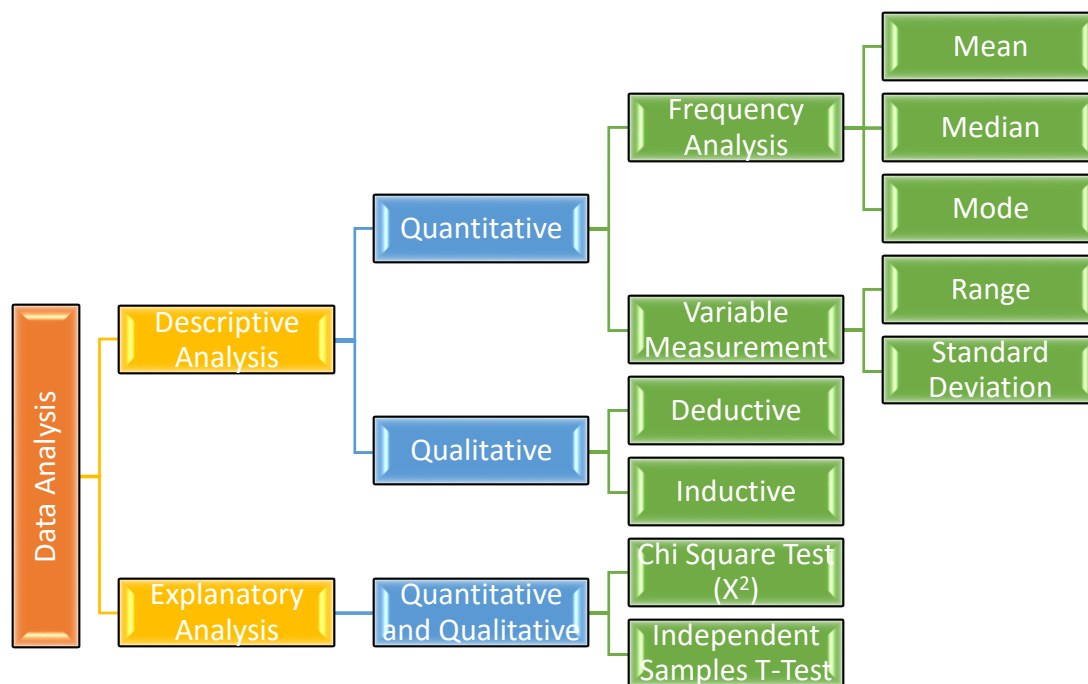
Figure 1: Types of Analysis According to Data Type

Reporting Results

This fourth step is an important stage in the assessment cycle aimed at delivering relevant and meaningful findings to the involved stakeholders. In a world full of information, effective reporting is key to ensuring a strong understanding of assessment results and making evidence-based decisions. This reporting can be presented in various methods. Among them are written reports and oral reports. Written reports typically have a specific format such as a cover page, summary, table of contents, program description, assessment questions, assessment explanation, results, and conclusions or recommendations. Visual aids such as charts and tables can facilitate understanding of the report and help stakeholders comprehend the report easily and quickly. Utilizing reporting results as a powerful tool can help share meaningful findings and provide a solid foundation for necessary actions to achieve positive changes.

Utilizing Study Findings

Leveraging assessment findings is a crucial step in maximizing the outcomes from assessment findings. Assessors play a vital role in expanding understanding and addressing complex questions. This can be achieved by effectively using assessment findings so that we can apply them in real-world practice. Research findings will only be beneficial if they report on specific assessment findings. Furthermore, the implications and recommendations from the assessment should also be explored and discussed for necessary changes. Moreover, local communities should also be engaged by sharing assessment findings with them. These actions can ensure the effective utilization of research findings to enhance understanding and the quality of decisions while driving positive change.

Revising

The sixth and final step in this Assessment Implementation Plan is the most critical. Researchers should continue their journey as assessors. It is important so that a program can

be continuously improved and its quality maintained and enhanced. Assessors can attempt to address different assessment questions in the future, expand the assessment, or consider repeating the assessment process.

Assessment Implementation Challenges and Strategies

The implementation of assessment often faces various complex challenges. In this process, assessors must confront various obstacles that can affect the quality and success of the assessment. Among the challenges that assessors may face are data collection, time constraints, assessment instruments, data management, personal confidentiality, and so on. Wise approaches and effective strategies are needed to overcome these challenges.

Data Collection

One of the main challenges is collecting relevant and sufficient data to conduct the assessment objectives. Assessors must ensure that the collected data is adequate and accurate to assess a program. The data collection process involves various sources such as tests, assignments, projects, observations, and interviews. Careful monitoring is necessary to ensure that the collected data truly reflects the program's abilities and achievements. Through meticulous data collection, assessments can be conducted objectively and provide a comprehensive understanding of the program being evaluated.

Time Constraints

Sometimes, assessments need to be conducted within a certain timeframe according to the stakeholders' requirements in a program. This can create pressure on assessors and compromise the overall quality of the assessment. Therefore, creating a realistic schedule and ensuring sufficient time to conduct the assessment thoroughly is crucial. Good time management can ensure that the assessment is carried out effectively and provides relevant results within the set timeframe.

Assessment Instruments

Assessment instruments refer to the tools or methods used to collect data and evaluate programs. The challenge lies in ensuring that the assessment instruments used are valid, reliable, and relevant for assessment purposes. This process involves the development, evaluation, and testing of assessment instruments such as tests, rubrics, or qualitative assessments. The effectiveness of an assessment instrument needs to be evaluated to ensure that it can measure program achievements objectively and consistently. Developing effective instruments and conducting pilot studies can help address this challenge.

Data Management and Personal Confidentiality

Assessment often involves data collection and management. Data management and personal confidentiality are important aspects of assessment implementation. The main challenge in this regard is ensuring that data is collected, stored, and used in a secure manner and in compliance with proper assessment ethics. Good data management involves protecting participants' personal information from unauthorized access or misuse. Encrypting or encrypting data and using secure storage systems such as cloud storage are among the steps that assessors can take to ensure data security.

Grit Program Assessment Expectations Based on Quintuple Helix Model

There are five expectations in the assessment of the GRIT program based on the Quintuple Helix Model. Figure 2 illustrates the model, which envisions the collective interaction and exchange of this knowledge in a state through five subsystems (helices): (1) the education system, (2) the economic system, (3) the natural environment, (4) the media-based and culture-based public (also known as 'civil society'), and (5) the political system.
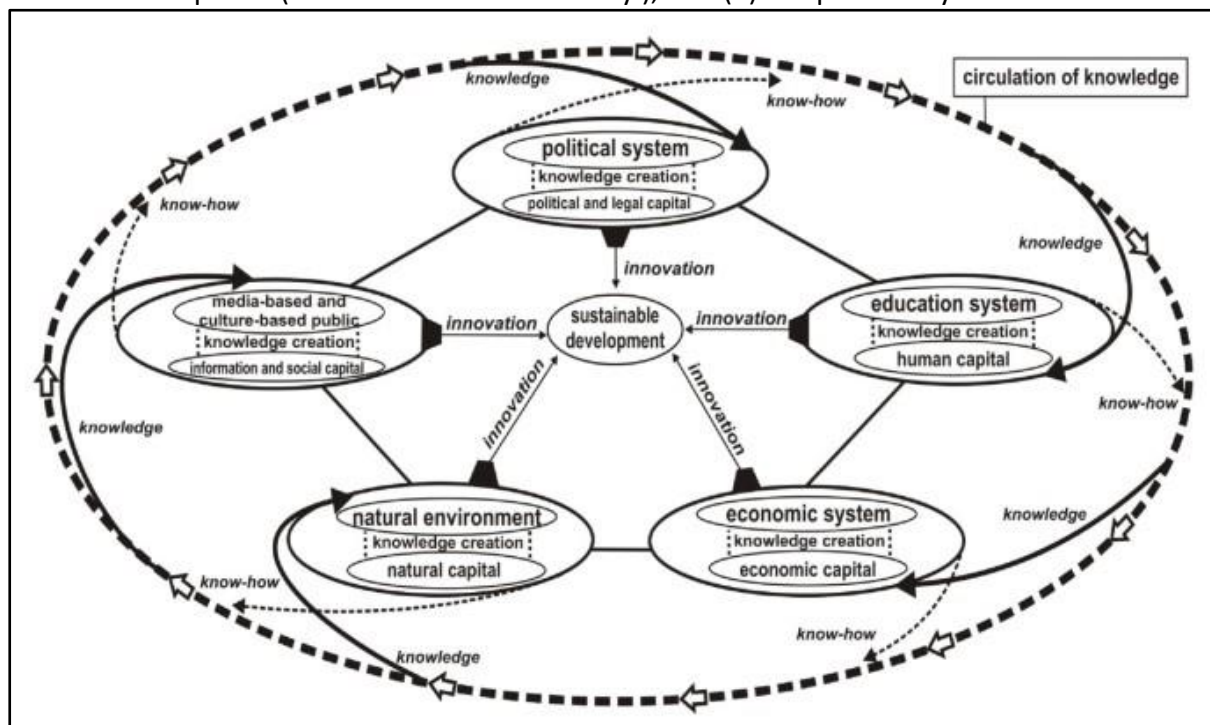

Figure 2: Expectations of GRIT Program Assessment based on the Quintuple Helix Model. (adapted from Carayannis et al., 2012)

What are the Expected Aspects Assessed for the GRIT Program Based on the Education System?

The educational subsystem can be defined as the higher education system, academia, universities and other higher education institutions. In the Model, this subsystem is central, as it forms and develops human capital of the country. The power of the educational subsystem is justified by the fact that universities concentrate the nation's core intellectual capital, represented by scholars, researchers, professors, teachers, and students. The aspects in the education system that we can expect to evaluate in the GRIT program are those focusing on student development beyond just academic achievement. GRIT programs aim to cultivate perseverance, so we can assess if students enrolled in them demonstrate a greater ability to stick with challenging coursework, complete assignments on time and overcome setbacks without giving up. Additionally, these programs target motivation and goal setting. We can evaluate if students show a stronger ability to set personal and academic goals, and more importantly, if they display the motivation to see those goals through. Furthermore, a core tenet of Grit is the belief that intelligence and abilities can be developed through effort. These programs can be evaluated based on whether students demonstrate a shift towards a growth mindset, embracing challenges as opportunities to learn and improve. Finally, do students enrolled in Grit programs report feeling more confident in their ability to succeed academically and personally? Increased self-efficacy can lead to greater engagement and a willingness to tackle difficult tasks. By evaluating these aspects, we gain a deeper

understanding of how Grit programs contribute to a student's overall development, fostering not just academic success but also the perseverance and self-belief needed to navigate future challenges and achieve long-term goals.

What are the Expected Aspects to be Assessed for the GRIT Program Based on the Economic System?

The economic subsystem can be defined as including industry, companies, banks and enterprises (business enterprise sector). This subsystem covers the economic potential of the country, such as entrepreneurship, commodities, the monetary system, available technologies, and other means of labor. The aspect in the economic system that we can expect to evaluate in the GRIT program relates to long-term workforce outcomes. While the economic subsystem itself does not directly implement these programs, it can be a valuable tool to evaluate their long-term impact on the workforce. We can assess this by looking at employee performance and retention. Do companies report that graduates of Grit programs demonstrate greater perseverance, work ethic, and a willingness to tackle challenges? This could translate to better overall employee performance and potentially lower turnover rates, benefiting businesses. Additionally, Grit's focus on perseverance and goal setting might be linked to a higher propensity for graduates to start their own businesses, fostering innovation and economic activity. Finally, the adaptability fostered by Grit programs can be crucial in today's job market. Do graduates show a stronger ability to adjust to new work environments and acquire new skills as needed? This adaptability benefits both employers and employees, leading to a more resilient workforce. However, evaluating these aspects requires long-term studies tracking program participants after graduation and into their careers.

What are the Expected Aspects to be Assessed for the GRIT Program Based on the Natural Environment?

The natural subsystem includes resources, biota (flora and fauna), and other elements forming the natural capital of the country. In the process of studying sustainability, this subsystem is crucial. The aspect in the natural environment that we can expect to evaluate in the GRIT program focuses on how participants develop perseverance, resilience, and a long-term commitment in addressing environmental challenges. We can evaluate GRIT programs by observing how participants handle adversity, persevere in conservation efforts, tackle complex environmental problems, and adapt to a changing environment. Their ability to bounce back, stay committed, solve problems, and adjust approaches demonstrates the effectiveness of GRIT programs in fostering a generation dedicated to environmental sustainability. By focusing on these aspects within the natural environment, we gain valuable insights into how GRIT programs contribute to building a generation of individuals dedicated to tackling environmental challenges and fostering a sustainable future.

What are the Expected Aspects to be Assessed for the GRIT Program Based on Media-Based and Culture-Based Public (Also 'Civil Society')?

Civil society can be defined to include media- and culture-based public, non-governmental organizations in the educational and scientific spheres, and the private non-profit sector of the national economy. This subsystem combines the social and informational capital of the country, where social capital encompasses traditions, mores, and values of citizens, and information capital denotes communication between people, including through social networks. The aspect in civil society that we can expect to evaluate in the GRIT program

focuses on how participants develop the skills and perseverance needed to address social challenges. We can assess programs by evaluating participant success in community engagement and collaboration, reflecting their GRIT in a social context. Furthermore, civil society provides a platform for public awareness and advocacy. GRIT programs can be evaluated on their ability to equip participants with the perseverance to keep advocating for change, even amidst challenges. Looking beyond advocacy, civil society often emphasizes Social and Emotional Learning, aspects that complement GRIT. We can evaluate how effectively programs integrate SEL components that build self-awareness, empathy, and relationship-building skills. Finally, civil society frequently tackles complex social issues. Programs can be evaluated based on how well they equip participants with critical thinking and problem-solving skills that go hand-in-hand with GRIT. By evaluating these aspects within civil society, we gain a broader understanding of how GRIT programs contribute to developing well-rounded individuals with the perseverance, collaboration skills, and critical thinking needed to address social challenges and contribute to a positive societal future.

What are the Expected Aspects to be Assessed for the GRIT Program Based on the Political System?

The political subsystem can be defined to include the government, which establishes strategic guidelines for the country's development, declares long-term priorities, and develops tactical programs for their achievement. This subsystem covers the legal capital of a country, encompassing aspects of lawmaking in the fields of science, education, intellectual property, knowledge and technology transfer, as well as aspects of organizing and administering sufficient conditions to comply with applicable law. The aspect in the political system that we can expect to evaluate in the GRIT program relates to policy and long-term societal impact. Grit fuels perseverance in navigating complex policy changes. Programs can assess participants' determination in advocating for their cause, persisting through bureaucratic hurdles, and continuously pushing for change. This unwavering dedication showcases their grit in the political arena. Political activism often faces challenges. Grit programs can evaluate participants' ability to bounce back from setbacks, overcome obstacles in organizing movements, and deal with resistance. Their capacity to persevere despite adversity highlights their grit and resilience. Finally, the political landscape is dynamic. Programs can assess participants' ability to adapt to policy shifts, adjust advocacy strategies, and navigate evolving alliances. This adaptability in the face of change further demonstrates the effectiveness of Grit programs in fostering a more engaged and resilient citizenry.

Conclusion

In conclusion, this paper delved into the integration of Quintuple Helix Model expectations into the evaluation of GRIT programs. There are six proposed steps for implementing systematic assessment such as prepare for data collection, collecting data, analysing data, reporting results, utilizing study findings and revising. Besides that, this paper also discusses the major challenges during implementing an assessment and strategies to avoid them. Finaly, by examining how these programs foster collaboration among government, industry, academia, civil society, and the media we gain more comprehensive understanding of their impact. Evaluating GRIT programs through this perspective enables us to assess not only individual development but also their potential contribution to a more collaborative and resilient society. Thus, this conceptual paper aims to enhance the understanding, learning, and existing knowledge regarding the evaluation of GRIT programs based on the expectations

of the Quintuple Helix Model. Introducing a broader approach to evaluating GRIT programs by integrating the Quintuple Helix Model reveals insights into how these programs foster a more engaged and collaborative citizenry by evaluating participants' ability to navigate policy changes, overcome activism challenges, and adapt to a dynamic political landscape. This suggests that GRIT programs may not only benefit individuals but also contribute to a stronger and more resilient society as a whole. The evaluation approach of the Quintuple Helix Model indicates that GRIT programs may extend their impact beyond individual development, promoting collaboration across societal sectors. This contributes to both GRIT theory by understanding its broader effects and program design that encourages cross-sector collaboration. While this paper proposes a new framework, it lacks real-world testing. Implementing it with actual programs would enhance its value. Future research could involve real-world testing by piloting programs that integrate the Quintuple Helix model into existing GRIT initiatives, showcasing its effectiveness in fostering collaboration across sectors.

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