The Strategy of Soft Skills Development in Higher Education (Case Study at The Institut Teknologi Bandung, Indonesia)

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Abstract. The main ingredients for a nation's development are high-quality human resources. Not only do they have excellent technical skills, but also excellent soft skills. The value of soft skills in the growth of the knowledge-based economy is being increasingly recognized in modern society. Communication skills, self-management, innovation, and/or creativity are important soft skills, among others, necessary to be able to respond to the workplace. Higher education is therefore committed to the challenges of giving the students all the necessary soft skills. This study uses a mixed technique and a case study to describe the approach to developing soft skills in higher education. The results are used to inform the development of the most crucial soft skills for ITB graduates. All of this is based on the fact that graduates must have a balance between soft skills and hard skills that will be useful for their lives when they enter society.

Keywords: quality human resources · soft skill · higher education

1 Introduction

Natural resources, such as forestry minerals, climate, water accessibility, energy supplies, etc., are seen by contemporary economics as being crucial to a nation's economic development (Li & Xiao, 2019). A nation with an abundance of natural resources is in a better position to develop quickly than one with a scarcity of such resources. Although rich resources are a necessary requirement, they do not fully explain all elements of economic progress. People design and oversee economies. These people must be able to carry out the tasks necessary to build such an economy. Human capital refers to factors that influence economic growth and decline and are dependent on population (Gruzina et al., 2021). Human capital is neither physical capital nor financial capital. In fact, this capital has been defined as the knowledge, skill, creativity, and health of the individual (Becker, 2002). In a new definition of human capital, it is considered as a collection of features, life trade, knowledge, creativity, innovation, and energy, which people invest it in their work (Pasban & Nojedeh, 2016; Weatherly, 2003).

In addition to its natural resources, the state also has substantial assets in the form of its human resources, which are of very high quality (Saleh et al., 2020). As a result,

nations around the world are scrambling to enhance their human resources so they can compete with other nations in a variety of fields (Tërstena et al., 2019). The quality of human resources is determined by, among other things, the competencies they have, both in hard and soft skills. According to (Andrews & Higson, 2008), "soft skills refer to a cluster of personal qualities, habits, attitudes, and social graces that make someone a good employee and compatible to work with." Soft skills are frequently defined as desirable characteristics for certain types of employment that do not rely on acquired knowledge; they include common sense, the ability to deal with people, and a positive, flexible attitude (Robles, 2012). Soft skills are not only necessary for work, but they are also essential for everyday life. These competencies are very essential in creating productive human resources and, in turn, will be beneficial in developing the nation (Staboulis & Lazaridou, 2020). A previous study identified the top 10 soft skills as perceived the most important, namely, communication, courtesy, integrity, positive attitude, professionalism, responsibility, social skills, flexibility, work ethic, and teamwork (Robles, 2012).

Daniel Goleman (1995), in his work Emotional Intelligence, says that intellectual intelligence only contributes 20% to the success of a person's life. The meaning of Goleman's statement is that 80% of a person's success is influenced by factors other than intellectual intelligence (IQ). Indirectly, he wants to emphasize that a person's success is determined more by emotional intelligence (EQ). Emotional intelligence broadly includes five things, namely self-awareness, self-regulation, motivational motivation, empathy, and social skills (Celik & Erbay Cetinkaya, 2022). Other research shows that soft skills play a role in 85% of career success and 15% of hard skills, namely the knowledge and technical skills possessed by students (National Soft Skills Association, 2015; Vasanthakumari, 2019).

Teaching soft skills is a fundamental educational activity that must start very early in life. Furthermore, the development of soft skills starts within the family, even earlier than the time when the child goes to school (Adheisat, 2022). It is very difficult to predict what the labor world will be in the future; only short-term predictions can have sense. However, educational programmes should try to consider possible future scenarios to educate young people to find a job, but this is not easy to do, as the future is often unpredictable (Hautamäki, 2015). Education institutions have a duty to not only build the capacities of younger generations by providing them with hard skills to make them capable and professional, but also enrich these human resources by strengthening their soft skills (Morandin, 2015). Educational institutions must focus on methodologies and techniques to help students develop transversal competences that will be useful to them in any circumstance.

Higher education is an important element in the development of quality human resource soft skills. Therefore, universities must develop a strategy to improve soft skills in a structured, systematic, and comprehensive manner to prepare graduates to face the world of work, where superior human resources are those who do not only have hard skills obtained from the discipline they have engaged in but also have the ability in the soft skills aspect that later can support work effectiveness in the job market (Cornali, 2018). To meet the demographic bonus in Indonesia, which is estimated to occur in 2030, universities are obliged to develop an accurate strategy for preparing

their students to become productive human beings by equipping them with hard skills that are in accordance with the needs of the times, but more importantly, by enriching their competencies by strengthening the soft skills required (Taniguchi et al., 2018; Warsito, 2019).

Institut Teknologi Bandung (ITB) is one of the best universities in Indonesia that can produce superior human resources for the country (Rustiadi et al., 2020). Based on the assessment of the user study related to the quality of ITB graduates, there is a gap between the soft skills had by the graduates and the ones needed by the users (companies). The results of the user survey show that the highest gaps in terms of interest and satisfaction are self-management and others (−0.77), communication skills (−0.71), and innovation and/or creativity (−0.69) (Rustiadi et al., 2020). Those three competencies are the most important soft skills in the job market. Flex Day (2012) said that students need soft skills for their success in their careers and workforce. Widiyono (2019) also stated that the main problem for university graduates is not their hard skills but their soft skills. In this regard, it is an alarm for ITB to find the right strategy to increase its graduates' soft skills.

So far, the improvement of soft skills at ITB has been carried out in several ways, including by implementing a curriculum based on four principles, namely: an out-of-business curriculum, a business outcome-based curriculum by looking at the needs of the business world based on competence and quality; student centred learning, curriculum based on student activity when participating in the learning process in class with a relatively large number of students; continuous improvement, curriculum based on continuous improvement by following the needs of the community that can be updated flexibly without having to wait for further improvements in the next 5 years; and international standards, curricula based on international standards concerning the recognition of international accreditation agencies or bodies. Evaluation of alumni's soft skills is carried out annually through tracer studies and user studies. Tracer Study is one way to get feedback from alumni regarding the alignment of educational outcomes and curriculum received with the competencies needed in the real world of business and industry. Meanwhile, the User Survey is feedback from companies (users) regarding their satisfaction with ITB alumni. ITB also collaborates with the government for the development of soft skills through various activities such as Student Creativity Week and thematic Real Work Lectures (Rozak, 2017).

Although there have been several attempts to apply soft skills at ITB, the results of the ITB user study in 2020 show that the soft skills points of alumni are still relatively low. This is considered to need further study so that its implementation and development can be more strategic. In this research, ITB will be used as a case study to determine the strategy for implementing and developing soft skills so that the impact is maximal and comprehensive. More specifically, the objectives of this study include several arguments, as explained in the background and motivation for conducting this research:

1. Identify and map the soft skills (soft skills mapping competence) that are needed and must be developed by universities in response to the needs of graduate users;
2. Creating character education strategies in universities to help students improve their soft skills.

3. Identifying and creating a hypothetical soft skills model that is needed and developed by universities in response to the needs of graduate users.

2 Literature Review

2.1 Softskill

Soft skills are defined as skills and life skills necessary to live either alone, in groups, in society, or with the creator (Hyder et al., 2020). Having soft skills makes one's existence more meaningful in the community. The most important soft skills, among others, are: being able to handle interpersonal relations, taking appropriate decisions, communicating effectively, and having a good impression and impact to gain professional development (Vasanthakumari, 2019). Several studies have concluded that soft skills have a greater influence on performance in the business and industrial world than hard skills (Ibrahim et al., 2017). Furthermore, studies by the Stanford Research Institute and the Carnegie Mellon Foundation among Fortune 500 CEOs established that 75% of long-term job success results from soft skills mastery and only 25% from technical skills (Doyle, 2021).

Researchers at Boston University and the University of Michigan's Ross School of Business also found that workers with soft skills training are 12% more productive than those without them. Harvard University reported that 85% of success in the workplace is attributed to soft skills, and only 15% to technical skills. A public interest study further conducted by McDonald & Hite (2018) in the UK predicted over half a million people will be held back from job sectors by 2020 due to a lack of soft skills. All of the above research confirms the importance of soft skills and is a strong reason for universities to enrich their graduates with them before they are ready to enter the workforce and be able to achieve success.

2.2 The Role of Higher Education Institution

One of the main objectives of higher education is to mold students into people who have strong morals, soft skills, and are relevant to the demands of the workplace (Abbot, 2016). Universities are dedicated to the issue of ensuring that students have all the skills necessary to react to the constantly changing demands of modern society and the workplace (Cornali, 2018). As a result, if students pursue further education, it is crucial to help them develop their character and soft skills. The university must act as a catalyst for implementing character education and all-encompassing soft skills.

Depending on how important and appropriate the education is, soft skill development can be done to mold the character of university graduates. University initiatives to enhance students' technical and soft skills competency result in people with impeccable character who are prepared to participate in the workforce ((Tres) Bishop, 2017). It is possible to determine how and when to infuse the appropriate character through routine and closely supervised soft skills training by understanding the requirements and problems associated with infusing good character with the necessary soft skills.

Numerous studies (King, 2003; Mourshed et al., 2012; Yunus & Li, 2005) have raised serious concerns about the widening gap between graduates' skills and capabilities, and

the demands of the work environment in an increasingly mobile and globalized society. The existence of an imbalance between the ownership of hard skills and soft skills of students in tertiary institutions requires concrete steps to be developed to overcome them, so that the quality of graduates has two competencies required by beneficiaries (Trinder, 2008).

3 Method

This research used a mixed method with a case study. The quantitative data was collected through questionnaires, while the qualitative data was collected through interviews and focus group discussions. The location of research is Institut Teknologi Bandung, with students, lecturers, and university leaders as the objects of research. The research participants were 518 undergraduate students from 12 faculties, consisting of 52% females and 48% males. The number of respondents is based on the Slovin technique, with a minimum of 10% of the population (Sugiyono, 2015). Apart from the students, as the supporting data, we include 7 lecturers and 2 members of the university leaders who were selected using purposive sample criteria that were adapted to the research objectives.

A case study is a research approach that is used to generate an in-depth, multifaceted understanding of a complex issue in its real-life context. Case study is conducted by following several crucial stages, namely defining the case, selecting the case(s), collecting and analysing the data, interpreting data, and reporting the findings. In contrast to experimental designs, which seek to test a specific hypothesis through deliberately manipulating the environment, the case study approach capture information on more explanatory 'how', 'what' and 'why' questions. The case study approach can offer additional insights into what gaps exist in its delivery or why one implementation strategy might be chosen over another. This in turn can help develop or refine a theory (Crowe et al., 2011).

ITB was chosen as the object of this case study research as one of the best higher education institutions in Asia according to the world university ranking agency Quacquarelli Symonds (QS) based on employability seen from the indicators of alumni outcomes, employer reputation, and graduate employment rate (Quacquarelli Symonds, 2022).

3.1 Data Collection and Analysis

3.1.1 Quantitative Data

The mapping of ITB students' soft skills is based on 21st Century Student Competencies, including; learning and innovation skills, digital literacy, as well as life and career skills. For quantitative data collection, each respondent was asked to provide feedback regarding priority soft skills that must be developed, as seen from their urgency and usefulness (see Table 1).

3.1.2 Qualitative Data

Qualitative data was collected through interviews and focus group discussions with lecturers and university leaders. The collection of qualitative data is intended to obtain

Table 1. 21st Century Student Competition

No	Competences	Skill
1	learning and innovation skills	Creativity and innovation, critical thinking, problem solving, communication, collaboration
2	digital literacy	Information and media literacy, ICT literacy
3	life and career skills	Flexibility and adaptability, initiative and self-direction, leadership and responsibility, productivity and accountability, resilience, and lifelong learning

Source: adapted from P21 (2008).

an overview of the level of institutional interest in the quality of graduates, the level of needs of graduate users, as well as the strategies adopted by the institution in developing student soft skills.

4   Results and Discussion

4.1   Soft Skills Priority in the Workplace

Mastery of soft skills is very important for individuals, both in terms of formal and non-formal. The results showed that 74% of respondents said that soft skills are very important for personality development. For students, the need for strengthening soft skills is not only important for personal development but also for career development in the business world and industry. In this case, soft skills are very influential in personal and professional life (Dalaya, 2015).

The development of soft skills needed to live today is one that provides a global lifestyle and culture that is in accordance with the ethics and norms of the nation but is not limited to building interactions with global life. Respondents explained a number of priority soft skills needed according to their level of importance and needs, including;

1. Communication skill
2. Self-management and others
3. Innovation and creativity
4. Cooperation with others
5. Judgment and decision making
6. Emotional intelligence
7. Knowledge and application of the field of science
8. Smart act
9. Negotiation skill
10. Transdisciplinary thinking

Meanwhile, when referring to the 21st Century Student Competition and Support System (Fig. 1), students assess that, sequentially, the competencies that must be developed are; learning and innovation skills (1st priority), life and career skills (2nd priority),
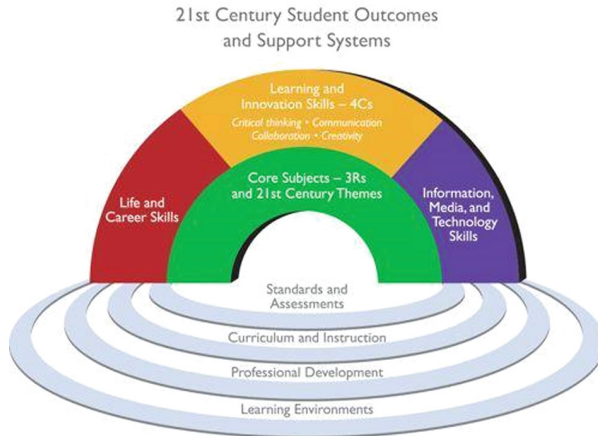
Fig. 1. 21st Century Student Competition and Support System (adapted from P21, 2008)
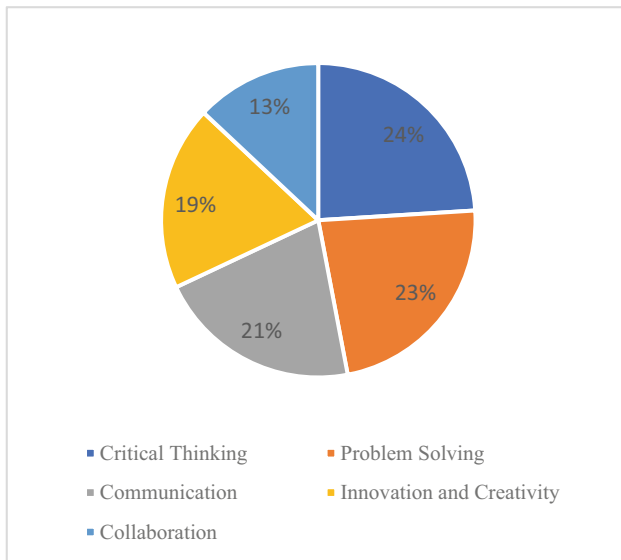

Fig. 2. Learning and Innovation Skills Priority

and digital literacy (3rd priority). These three core elements need a support system that embodies standards, assessments, curriculum, instructions, professional development and learning environments (Chu et al., 2017).

Of the three skill areas, 38% of respondents rank learning and innovation skills as the most important, 34% rank life and career skills as the second most important, and digital literacy as the last. In learning and innovation skills, the order of priority skills required includes critical thinking, problem solving, communication, innovation and creativity, and collaboration, with percentages as can be seen in the Fig. 2.
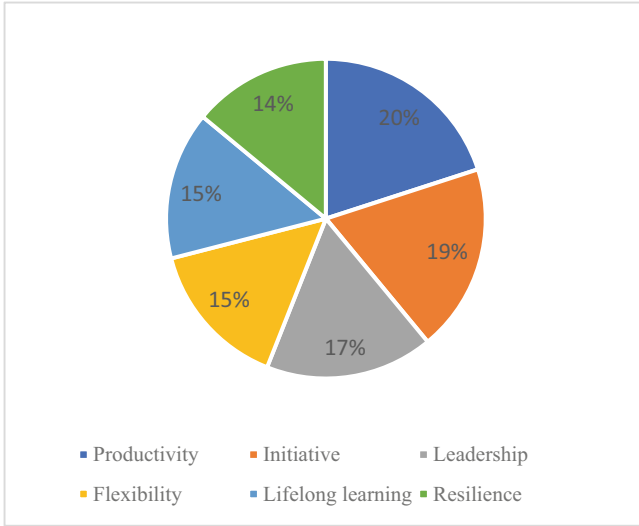
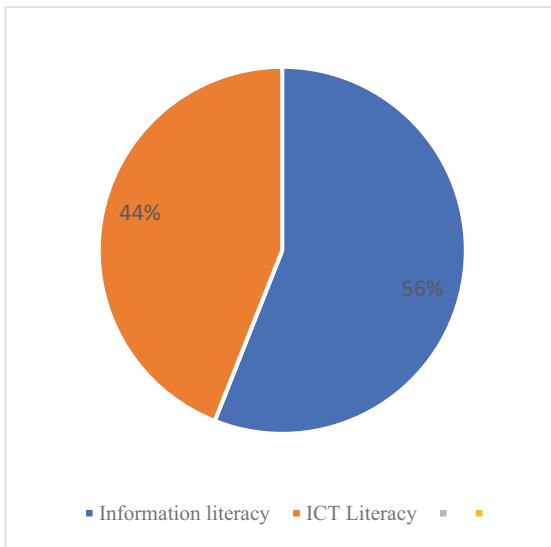**Fig. 3.** Life and Career Skills Priority

Fig. 4. Digital Literacy Priority

Productivity, initiative, leadership, flexibility, lifelong learning, and resilience are the skills needed in the order of priority in life and career skills (Fig. 3).

Information literacy and information, communication, and technology (ICT) literacy are the most important skills in digital literacy (Fig. 4).
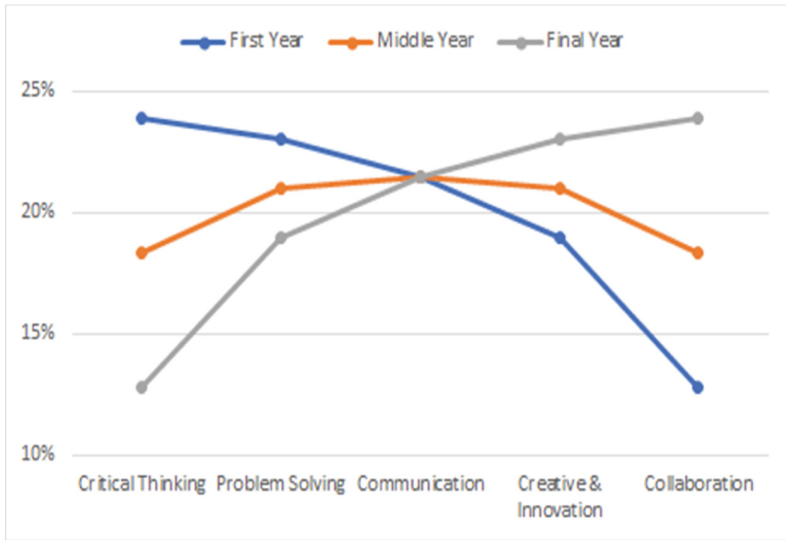
Fig. 5. Learning and Innovation Skills per Level

4.2   The Development of Skill Priority at Every Level

Undergraduate programs in Indonesia are generally carried out for 4 years (eight semesters). Regarding the development of soft skills for students, it can be further divided into three stages, namely; first year, middle year (second and third year) and final year. Each stage has a different soft skills development orientation according to the needs and expected outcomes.

Soft skills given with a fairly high percentage in the first year will be gradually reduced at the next level. This continues until students get all the soft skills in a balanced way in the final year. In Learning and Innovation skills, there are several soft skills associated with the value of critical thinking (24%), problem solving (23%), communication (21%), creativity and innovation (19%), and collaboration (13%). The weighting and provision of soft skills obtained at each stage or level of students can be seen in the bar chart (Fig. 5).

Using the same method as before, the priority percentages for life and career skills were calculated, namely productivity (20%), initiative (19%), leadership (17%), flexibility (15%), lifelong learning (15%), and resilience (14%). The six skills are processed, and the proportion of skills awarded each year is shown in the bar chart (Fig. 6).

Then for Digital Literacy, there are two skills, namely Information and Media Literacy (56%) and ICT Literacy (44%). The provision of stimulus for soft skills is quite balanced every year. This shows that digital and information capabilities are primary capabilities and must be met regardless of the conditions. The weighting given in each year can be seen in Fig. 7.

For soft skills development to run optimally, higher education support is needed. The results of the study indicate that several aspects that can support the achievement of soft skills development include; conducive learning conditions or atmosphere (33%),
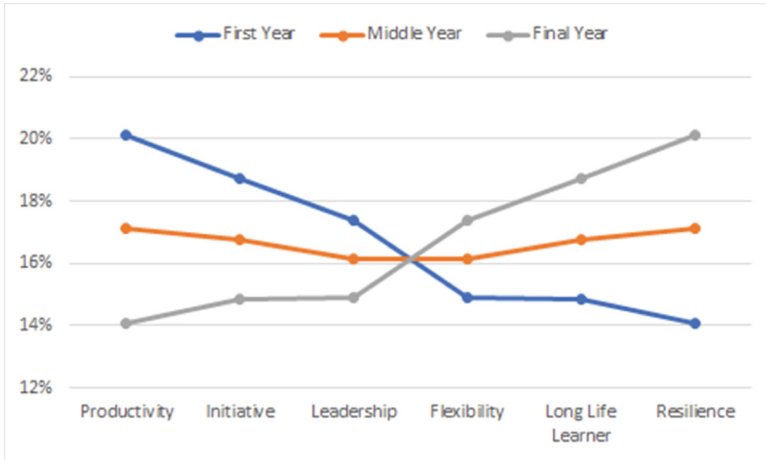
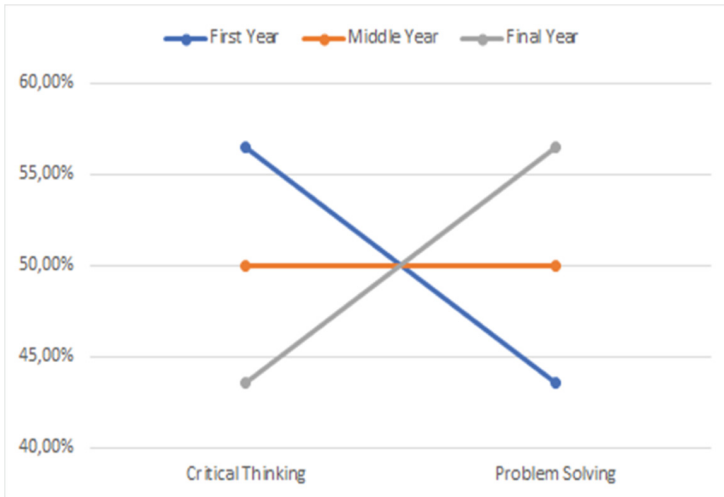**Fig. 6.** Life and Career Skills per Level

Fig. 7. Digital Literacy Proportion

freedom to find sources outside campus (25%), interaction with lecturers outside of learning hours (22%), and a 20% variety of subjects. In addition, the application of demonstration and practice learning methods, discussions, research projects, and social projects is seen as being able to support the achievement of the required soft skills.

4.3   Strategy for Developing Soft Skills in Higher Education

The ITB's vision and objective, its strategic planning, user survey results, the demands of business and industry, and the difficulties of the twenty-first century serve as the
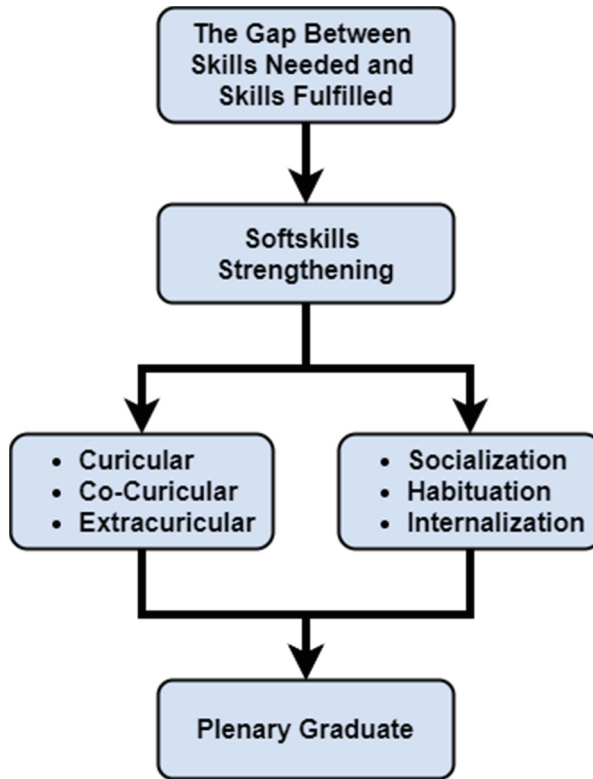
Fig. 8. Macro Context for Strengthening Soft skills in Higher Education

foundation for the development of soft skills in higher education. The mission of ITB is to lead transformations that can advance the welfare of the Indonesian people and the entire globe by becoming a world-class university that is honorable, independent, and widely respected. Based on this vision, ITB cultivates the graduates' creative and critical thinking abilities as well as their ethical and responsible attitudes, preparing them to be dependable employees, business owners, leaders, and social change agents. To do this, an academic culture must be developed that transforms universities into places of learning, culture, guardians of values, agents of change, and pillars of academic freedom. The implementation of academic culture takes the shape of ITB activity programs, which comprise in-class lectures that build both academic and non-academic potential and which can be attained through co-curricular and extracurricular activities. The flow of the process of enhancing soft skills in higher education is as shown in Fig. 8.

The amount of significance and the level of company satisfaction with ITB graduates varied significantly. According to the user survey results, the areas with the greatest interest and satisfaction gaps are self-management and interpersonal relationships, communication skills, and creativity or innovation (Rustiadi et al., 2020). Through socialization, habituation, and internalization, soft skill strengthening can be accomplished in curricular, co-curricular, and extracurricular programs (Sopa et al., 2020). At the socialization

stage, soft skills are introduced and understood conceptually as well as in terms of principles, rules, ideas, and facts. The necessary soft skills are applied during the habituation phase. The values of social conduct are ingrained, and students' intellectual abilities are consistently improved during the internalization stage. Soft skill development must be integrated, comprehensive, and long-lasting as a system (Fig. 9).

Numerous initiatives were undertaken to assist these advances, starting with the requirement for ongoing improvements that must be made to enhance the development of character and soft skills in higher education. The Tracer Study and User Study were conducted as an extension of the research on graduate credentials. While the User Study is based on surveys given to users in places where alumni have worked, the Tracer Study includes some data from alumni who have graduated and are working. The outcomes of achieving the requirements or competencies that have been provided by graduates in the workplace are acquired from these two types of research.

Further analysis of a number of skills that have a significant gap (competency gap) and need to be improved is done using the data gathered. The gaps are arranged in size order, which will be helpful in creating development objectives for soft skills. Implementing the priorities must take into account a number of factors, including the depth and breadth of learning. According to the students' academic standing, the implementation stage will be offered starting in the first year, middle year, and final year, which is consistent with the typical study period in higher education.

The first year of college is where most students start. Students will receive briefings on the introduction to the campus community at this point so they may start to become accustomed to a more diverse setting. Here, you can also find information on how to introduce yourself to your best advantage. Additionally, there are resources on motivation and methods for achieving success on campus. Pupils are given the chance to communicate in their different regional languages through co-curricular programs at this stage, which helps students develop their social skills and understanding of diversity. Curricular programs will be used to offer a grasp of Indonesian (as the national language).

The second and third years of college are known as the middle year. At this point, students will engage in academic pursuits that follow the curriculum of the selected study program. Additionally, two courses outside of the study program—civic education and character education—will be offered. Character education is given to students to help them develop strong moral character, while citizenship education is given to help each student's sense of nationalism. Students take part in a variety of co-curricular and extracurricular activities in addition to a variety of curricular activities through a variety of programs, such as systematic and tier-based leadership development (study programs, faculties, and universities), charitable endeavors, open pulpits, as well as various joint activities between student organizations. Building leadership, cooperation, collaboration, empathy, respect, public speaking, and other virtues are the goals of this type of activity.

The last year is when pupils reach the point where they are already capable in both hard and soft abilities. Therefore, at this point, the focus is on improving one's ability to use their skills in a way that benefits both themselves and the environment. All of these steps are sequential and systematic, so the final findings from the tracer research and
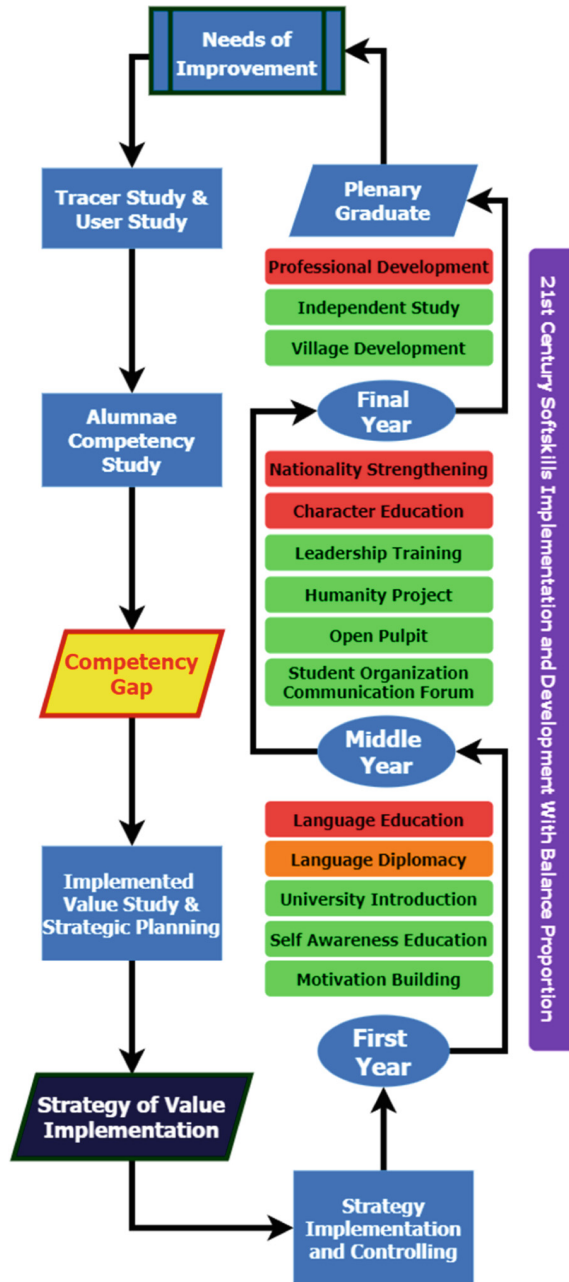
Needs of Improvement

Tracer Study & User Study

Plenary Graduate

Professional Development

Independent Study

Village Development

Final Year

Nationality Strengthening

Character Education

Leadership Training

Humanity Project

Open Pulpit

Student Organization Communication Forum

Alumnae Competency Study

Middle Year

Language Education

Language Diplomacy

University Introduction

Self Awareness Education

Motivation Building

Competency Gap

Implemented Value Study & Strategic Planning

First Year

Strategy of Value Implementation

Strategy Implementation and Controlling

21st Century Softskills Implementation and Development With Balance Proportion

Fig. 9. 21st Century Softskills Implementation and Development with Balance Proportion

user survey will serve as the foundation for the formulation of soft skills development strategies in the years to come.

5 Conclusion

Possessing a balance of hard and soft talents determines the effectiveness of human resources. Students need a variety of skills, in addition to hard ones that strengthen conceptual-theoretical knowledge, in order to succeed in school and in life. These include communication skills, self-management skills, interpersonal skills, creativity and innovation, teamwork, judgment and decision-making, emotional intelligence, knowledge of and application in the field of science, smart act, negotiation skills, and transdisciplinary thinking. These varied talents all refer to the learning and innovation skills, life and career skills, and digital literacy that make up the three main components of 21st century competencies. To prepare graduates for the workplace, institutions must implement their soft skill development strategy in an organized, systematic, and all-encompassing way.

ITB cultivates the graduates' creative and critical thinking abilities as well as their ethical and responsible attitudes, preparing them to be dependable employees, business owners, leaders, and social change agents through developing an academic culture. The implementation of academic culture takes the shape of ITB activity programs, which comprise in-class lectures that build both academic and non-academic potential and which can be attained through co-curricular and extracurricular activities. Through socialization, habituation, and internalization, soft skill strengthening can be accomplished in curricular, co-curricular, and extracurricular programs.

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