Preservation of Environment

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Introduction to Gross National Happiness (RX60011)
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Abstract

This theoretical commentary explores the concept of Gross National Happiness (GNH) and connects it directly with the preservation of the environment. The primary focus is on the impact of urban development and related issues on the life of people. A clean and green nature is on the demand list of everyone, but is this feeling of satisfaction and happiness enough to overcome all the advantages that a busy and crowded area can provide? Or is there a more advanced solution in the form of sustainable development present that can be a key to end the debate? All these questions are relative and the answer may vary from person to person. To reach a conclusion, we considered IIT Kharagpur's campus, which in fact reflects a mini-India with students all over the country as our survey region. Students and staff of the institution participated in the poll by contributing their views, perception, and ideas on satisfaction and happiness as well as further development. Our study considered the possible sub-domains and asked the audience about their satisfaction, future expectation, and decisions which need to be taken in order for the pursuit of happiness. Our results concluded that the majority of citizens are not comfortable with the current scenario of evolution and rapid changes and are in search of a more plausible solution. Growth at the cost of harm to nature is intolerable and thus our study concluded with statistics showing the role of conservation of environment as well as digitalization in one's achievement of happiness. This paper will act as the basis for any further research on the topic and can significantly help tomorrow's visionaries create a solution for today's enigma.

Keywords: Gross National Happiness (GNH); Environmental Preservation; Urbanization; IIT Kharagpur Campus; Technology and Sustainable Development; Pursuit of Happiness

1. Introduction

Gross National Happiness (GNH) is a comparatively new development paradigm. It envisions the holistic approach taken by sustainable development towards the notions of progress and gives equal importance to non-economic aspects of well-being. It helps us realize and connect with ourselves. Further, we get to know who we are, understand life in much more depth and connect with interdependencies. Preservation of the environment, being one of the nine domains and four pillars, plays a prominent role in GNH. It signifies our existence stemming from the five elements of earth, our responsibilities towards the environment, issues with ecology, environmental degradation and other affected areas.

Environment quality affects our happiness; Natural environment shapes, nurtures our happiness and the evaluation of our life [1]. The analysis of environmental degradation and happiness can be carried out by emphasizing the effect of pollutants, emissions on happiness levels, working on measures for environmental conservation and Environment Performance Index (EPI) for environmental degradation indicators [2]. Even the happier residents of Africa and various developed nations are willing to sacrifice some part of their income for the preservation of

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the environment [3]. Taking reference from Canadian happiness, we agree or disagree; the environment is dying. There are about 14 million of microplastics under the sea and in the gulfs. In the present pandemic situation, it is like a blessing in disguise that lockdowns have contributed to the healing of the dying environment.

This project has a deep context on the dangers impacted on the environment and the rising issue of its existence. There are numerous difficulties associated with the current environmental conditions, which eventually hamper our happiness levels. In today's technological era, the need to have a more luxurious and smooth life has added enormously to the environmental degradation. Therefore, there is a need to understand the environment's contribution to our development (as illustrated by Figure 1), its decreasing density and the resultant impact it has on our life. Taking the case of India, GNH has drawn attention to a satisfying but not overwhelming extent. Madhya Pradesh's government was the first state government to establish "Happiness Index" and to organize "Anand Mantralaya", also called "Ministry of Happiness" by signing an MOU with IIT Kharagpur [5]. The Narmada Seva Yatra, for the conservation of the Narmada river, under this ministry was one of the extraordinary steps taken towards the conservation of environment [6].



Figure 1. Illustration of the relation between Environment and Happiness [4]

This project gives a broader idea of the present mindset of the student community of IIT Kharagpur towards environmental issues. It also shows the happiness level of the student community of our campus through a questionnaire survey. Finally, the dataset and results give a grilling overview of environmental degradation and its future. Our project is related to the research carried out and going on currently on preservation of the environment. Kharagpur, not being a metropolitan city, has a colossal population of farmers. Our project can be correlated with the contribution of Dorji Penjore's work [7], the National Environment Conservation policy of Bhutan that has negatively impacted the well-being of the rural farmers. The meta-analysis of nature's connectedness, in connection with happiness can also be related to our project. It talks about the importance of personality in terms of the psychological benefits of nature through a sample space survey [8]. On similar lines, our project establishes a relation between the environment and happiness, in cases of urbanization [9], natural resources management and digitalization through a survey.

To address the above difficulties and answer the challenges faced by the community at IIT Kharagpur, we came up with some important research questions under broad indicators and sub-indicators. These research questions and its dimensions can also be extended to a larger sample space, say a society, state or even a country like India.

2. Indicators

The indicators, as a result of proper discussion covers all the basic groups and issues of IIT Kharagpur campus and its residents in relation with the environment. The indicators are:

i. Urbanization in IIT Kharagpur
ii. Natural resources management in the campus
iii. Environment benefits and Happiness
iv. Advanced Technology and Digitalization
v. Environment as a factor for Gross National Happiness

3. Research Questions

The research questions have been prepared after taking references from present issues, work and constructive debate. They pertain to preservation of environment and its effect on happiness, considering varied cases like urbanization, technological advancement and resource management. Most of the questions were given as rating questions (on a scale of 1-5) where 1 represents strong disagreement to the statement and 5 represents strong agreement. The questions are as follows:

3.1 *Urbanization in IIT Kharagpur* [10][11][12][13][14]

3.1.1 *Infrastructure*: Do you feel that more infrastructure development might hamper the green environment of our institute?

3.1.2 *Natural Habitat*: According to you, is urbanization destroying the natural habitat?

3.1.3 *Latest technology and environment*: Do the latest technology have the potential to consider urbanization and ecological preservation simultaneously?

3.1.4 *Integrated planning and balanced development*: Do you agree that the integrated rural-urban planning and regionally-balanced urban development is at par in our campus?

3.1.5 *Prioritization*: Should our campus prioritize certain ecosystem services (e.g., parks and green space) over others while considering urbanization?

3.2 *Natural resources management in the campus* [15][16][17]

3.2.1 *Water and air quality*: Do you agree that the advancements in urban and industrial areas in our campus have deteriorated the water and air quality?

3.2.2 *Transport*: Is implementation of green mode of transport necessary for the conservation of the environment in our institution?

3.2.3 *Organization and Administration*: Is there a need for a separate organization or public administration to look after environmental conservation?

3.2.4 *Environmental equity*: Since Kharagpur is mini India, is our campus incorporating environmental equity into its planning for ecosystem services? (Environmental equity describes a country, or world, in which no single group or community faces disadvantages in dealing with environmental hazards, disasters, or pollution.)

3.3 *Environment benefits and Happiness* [18][19][20][21]

3.3.1 *Greenery and Happiness*: Do you feel happier in greener areas compared to polluted places?

3.3.2 *Pollution and Satisfaction*: Would you rather live in a less polluted place than a more polluted place?

3.3.3 *Rural or Urban*: Would you rather live in a rural area than an urban area?

3.3.4 *Environmental issues and Happiness*:

3.3.4.1 How happy would you rate yourself to be on a scale of 1-10 considering the influence of surroundings and the environment around you?

3.3.4.2 Rate how do you feel about environmental issues in the current situation (where '1' indicates you do not care at all and '10' shows that you strongly care about).

3.4 *Advanced Technology and Digitalization* [9]

3.4.1 *Technology, Environment and Happiness*: Do you agree that technological advancements are affecting our campus ecology and our health, time, focus, and happiness?

3.4.2 *Satisfaction due to transition*: Rate your level of satisfaction during the current transition of lifestyles due to processes like “Smart City”, “Digitalization”, etc?

3.5 *Environment as a factor for Gross National Happiness* [15][18][19][22][23]

3.5.1 *GNH calculation*: Do you think "environment" should be considered as a factor in calculating GNH (the alternative indicator of GDP) of our institution and country?

3.5.2 *Environment Conservation*: Can sustainable development and happiness heal/save the environment?

3.5.3 *Urbanization and happiness*: Is the main purpose of urbanization in an institution the pursuit of happiness?

3.5.4 *Rapid Urbanization*: Are we satisfied or happy enough with the rapid change in our lifestyle due to urbanization in the campus?

3.5.5 *Improvement in GNH*: Do you agree that environmental preservation leads to improvement in gross national happiness?

4. Methodology

A thorough discussion was conducted among the group members to decide the sub-domains of research within the given topic and an extensive literature survey was done to understand the relevance of research, to find out relevant materials and know about previously established research work and findings. A need was felt to add new indicators in addition to the already existing ones to make it relevant to the IIT Kharagpur community. Each indicator was further divided into several sub-indicators to ensure that the study is conducted in a systematic and

structured way and to ensure that a varied range of areas is included within the scope of this work. Research questions were formulated based on the literature review and brainstorming sessions held in the group. These questions were categorised according to the sub-indicators that were previously decided. A survey form was drafted based on the indicators and few more questions were added through which the basic information of the respondents like the number of years of stay at the campus, region which he/she belongs to, and so on could be known. This survey form was circulated among the IIT Kharagpur student community through social media. Efforts were made to make sure the participation of students is from different walks of lives and different stages of their Kharagpur campus lives. Enough time was allotted for conducting the survey to ensure a large sample size and the results were collected in the form of graphical data to make it in a presentable format. Unbiased interpretations were made on different indicators based on the majority voices and conclusions were drawn based on those results.

5. Results

5.1 *Urbanization in IIT Kharagpur*

Urbanization is one of the most important indicators in the context of environmental preservation. The rapid increase in the number of students joining every year and the urge to compete globally in terms of overall performance of the institute has made it necessary to develop more infrastructure by compromising on the green cover of the institute. A survey was conducted based on the following sub-indicators and the results are as follows:

5.1.1 *Infrastructure (1 represents strong disagreement and 5 represents strong agreement)*

The ongoing infrastructure development is hampering the green environment of our institute.

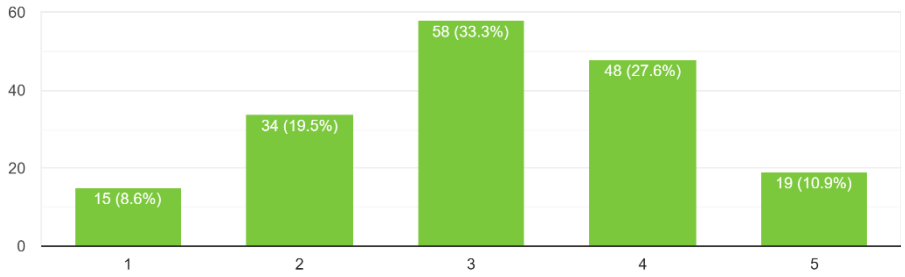


Figure 2. Plot showing the variation in number of students for different ratings in the Infrastructure sub-indicator

The survey results (Figure 2) indicate that about 60% of the students feel that despite the infrastructure development there is a large portion of greenery persists within the campus.

5.1.2 *Natural Habitat (1 represents strong disagreement and 5 represents strong agreement)*

Rapid Urbanization is badly affecting the natural habitat of the campus.

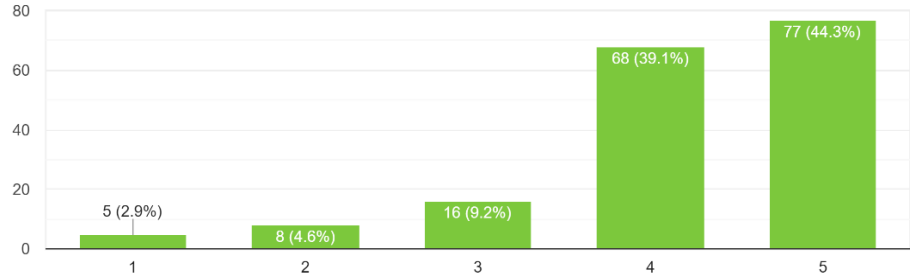


Figure 3. Plot showing the variation in number of students for different ratings in the Natural Habitat sub-indicator

From Figure 3, Almost 85% of the students feel that despite the large green cover, the rate at which it is decreasing due to rapid urbanization within the campus is alarming.

5.1.3 *Latest technology and environment (1 represents strong disagreement and 5 represents strong agreement)*

The latest technology has the potential to consider sustainable urbanization with ecological preservation.

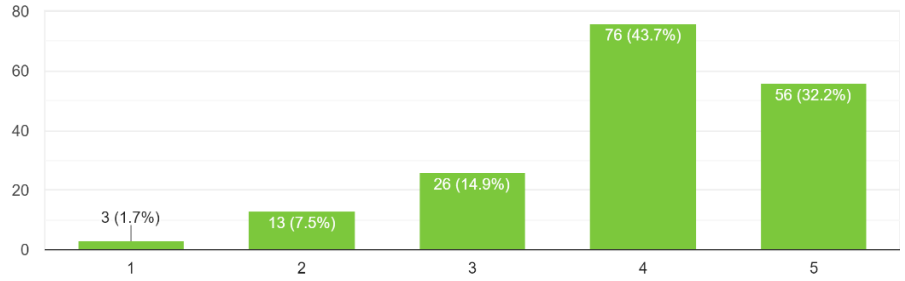


Figure 4. Plot showing the variation in number of students for different ratings in the Latest technology and environment sub-indicator

Most of the students agree (as per Figure 4) that with proper use of the latest technology, Urbanization can go hand in hand with ecological preservation.

5.1.4 *Integrated planning and balanced development (1 represents strong disagreement and 5 represents strong agreement)*

The integrated rural-urban planning and regionally-balanced urban development are at par on our campus.

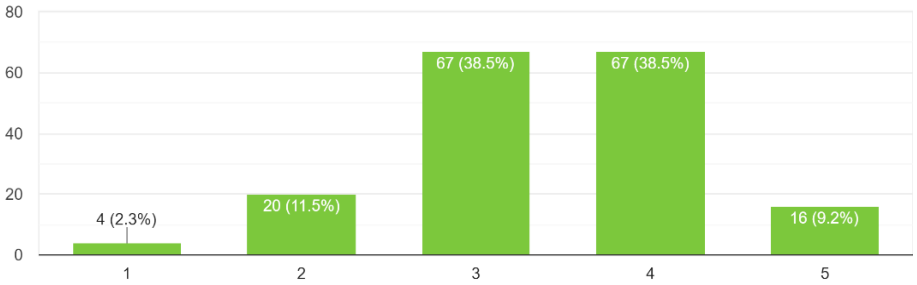


Figure 5. Plot showing the variation in number of students for different ratings in the Integrated planning and balanced development sub-indicator

77% of the students (Figure 5) believe that integrated urban-rural planning and balanced development are not up to the mark at present and measures are to be taken for sustainable development.

5.1.5 *Prioritization*

Should our campus prioritize certain ecosystem services (e.g., parks and green spaces) over others while considering urbanization?



Figure 6. Pie-Chart showing the response of the different students in the Prioritization sub-indicator

The results (from Figure 6) show that though all agree on the requirement of prioritizing certain ecosystems, there is a mixed voice regarding the policy of implementation. Slightly more than half of the residents feel that there is no proper methodology of implementation right now and immediate measures are necessary. 40% of them feel that proper care is already being taken by the concerned authorities. Few others added their own opinions regarding the same.

5.2 *Natural resources management on the campus*

With the IIT Kharagpur community being itself a mini-village, natural resource management is extremely necessary to ensure ecological well-being and environmental conservation. With a rapidly increasing population

and excessive and uncontrolled usage, the available natural resources are getting quickly depleted. This indicator is further categorized into a few sub-indicators and the results of the survey are as follows:

5.2.1 *Water and air quality (1 represents strong disagreement and 5 represents strong agreement)*

Advancements in urban and industrial areas in and around our campus have deteriorated the water and air quality.

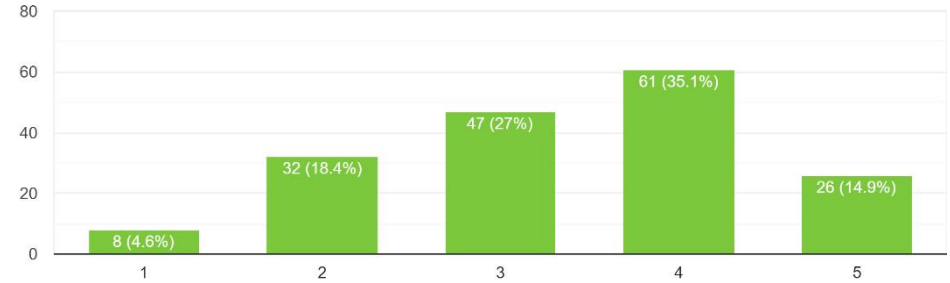


Figure 7. Plot showing the variation in number of students for different ratings in the Water and air quality sub-indicator

From Figure 7, About 61% of the students agree that there is a deterioration of water and air quality but the effect is not yet substantially high.

5.2.2 *Transport (1 represents strong disagreement and 5 represents strong agreement)*

The implementation of the green mode of transport necessary for the conservation of the environment in our institution.

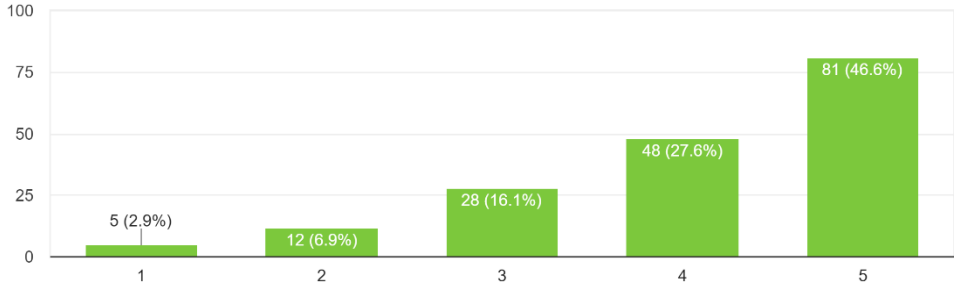


Figure 8. Plot showing the variation in number of students for different ratings in the Transport sub-indicator

Almost all of the residents agree (Figure 8) that there is a necessity for the implementation of the green mode of transportation for the conservation of the environment in the institute.

5.2.3 *Organization and Administration*

There is a need for a separate organization or public administrator to look after environment conservation on our campus.

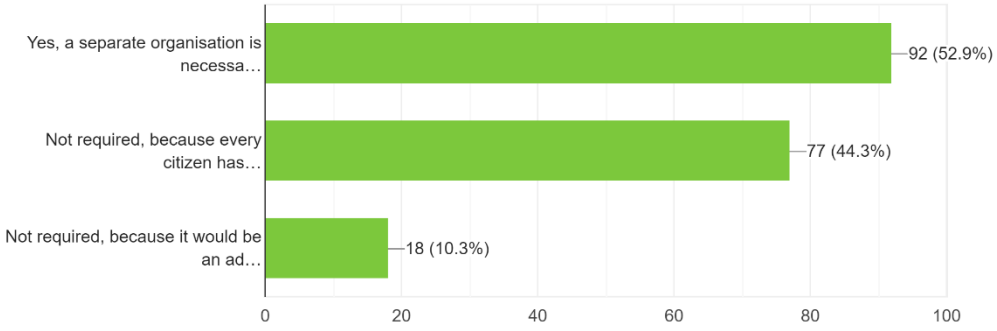


Figure 9. Plot showing the variation in number of students for different choice of options in the Organization and Administration sub-indicator

The participants are asked to choose among 1. The requirement of a separate organization, 2. An organization is not necessary because it is the responsibility of every citizen to contribute his/her part towards the environment conservation, 3. A separate organization would be a burden in terms of finances and human

resources. The result (Figure 9) clearly indicates the two categories of people where one relies entirely on the institutions/organization for any work to be done and the other is ready to take the responsibility to protect the environment.

5.2.4 *Environmental equity (1 represents strong disagreement and 5 represents strong agreement)*

Since Kharagpur is mini India, do you think our campus is incorporating environmental equity into its planning for ecosystem services?

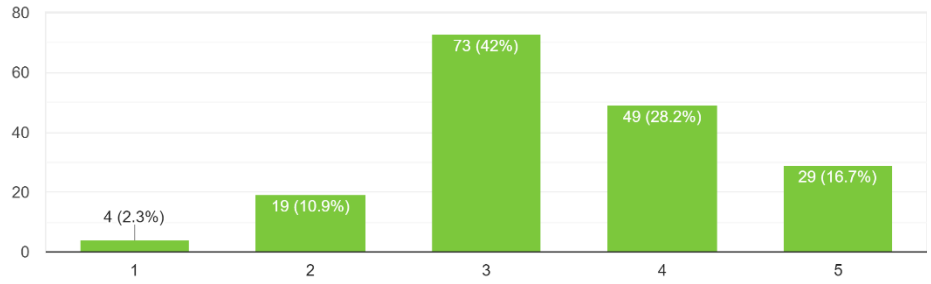


Figure 10. Plot showing the variation in number of students for different ratings in the Environmental equity sub-indicator

The majority of the students (Figure 10) slightly agree about the environmental equity within the campus. The distribution in results can be attributed to various different instances and the steps taken by the institution in those situations.

5.3 *Environment benefits and Happiness*

There are urban and industrial areas where air and water quality is deteriorating due to vehicular and industrial pollution, construction activities and unsanitary waste disposal and living conditions. Cities have higher salaries and education and lower unemployment rates, but they are less joyful than their small-town counterparts. Environmental quality shapes how we feel and how we evaluate our lives. The below survey shows how people are affected by environmental quality.

5.3.1 *Greenery and Happiness (1 represents strong disagreement and 5 represents strong agreement)*

You are more likely to feel happier in greener areas compared to polluted places.

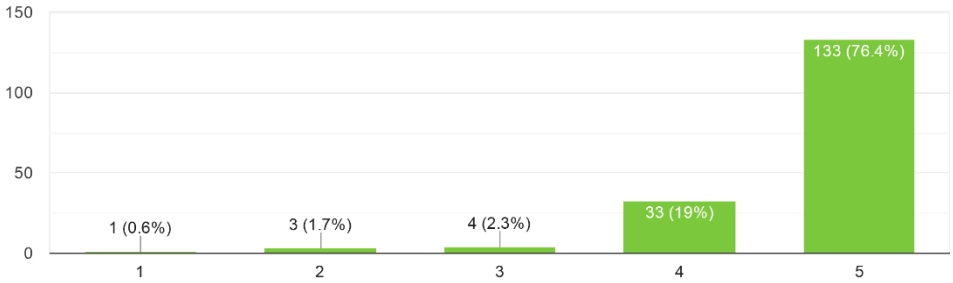


Figure 11. Plot showing the variation in number of students for different ratings in the Greenery and Happiness sub-indicator

Majority of the students (76.4%) feel happier in greener areas compared to polluted places (Figure 11). This depicts the importance of the natural environment. Mood, mindfulness benefits are derived from time spent in local outdoor or natural environments.

5.3.2 *Pollution and Satisfaction (1 represents strong disagreement and 5 represents strong agreement)*

You prefer to live in a less polluted place than in the centre of the city.

About 56.3% of the students (Figure 12) preferred to live in less polluted places. Pollution-related diseases continue to rise at an alarming rate and affect people's quality life. Air quality is likely to have an effect on people's sense of life satisfaction and happiness. Poor air quality is linked to cancer, and long-term damage to respiratory and cardiovascular systems. People who are aware of the harmful effects of pollution are choosing less polluted places over the centre of the city.

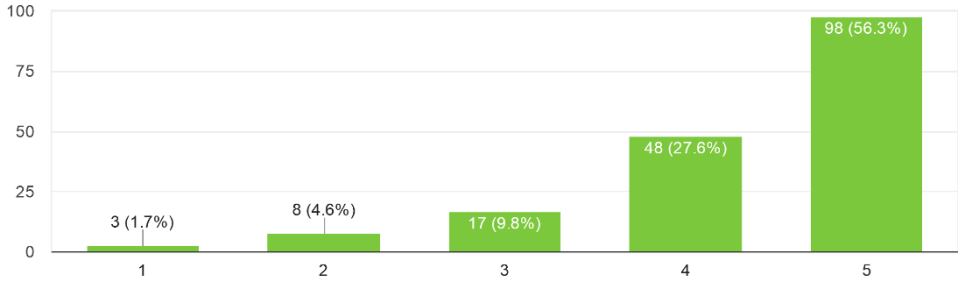


Figure 12. Plot showing the variation in number of students for different ratings in the Pollution and Satisfaction sub-indicator

5.3.3 *Rural or Urban (1 represents strong disagreement and 5 represents strong agreement)*

You prefer to live in an urban area than in a rural area.

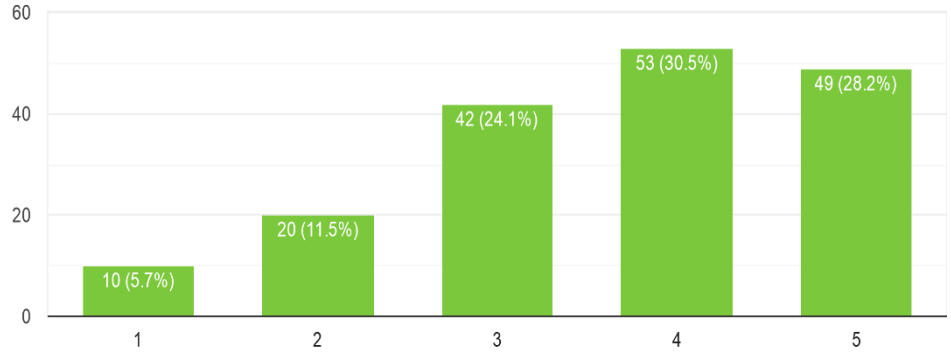


Figure 13. Plot showing the variation in number of students for different ratings in the Rural or Urban sub-indicator

There is a distribution of results (Figure 13). More than 50% of them are inclined to urban areas. There are often roads of better quality and well-built houses in urban areas. Education and transport facilities are highly developed in urban areas compared to rural. These maybe the reasons students have shown affinity towards the urban areas.

5.3.4 *Environmental issues and Happiness*

5.3.4.1 How happy do you rate yourself to be considering the influence of surroundings and the environment around you on a scale of 1-10? (where '1' indicates you do not care at all and '10' shows that you strongly care about).

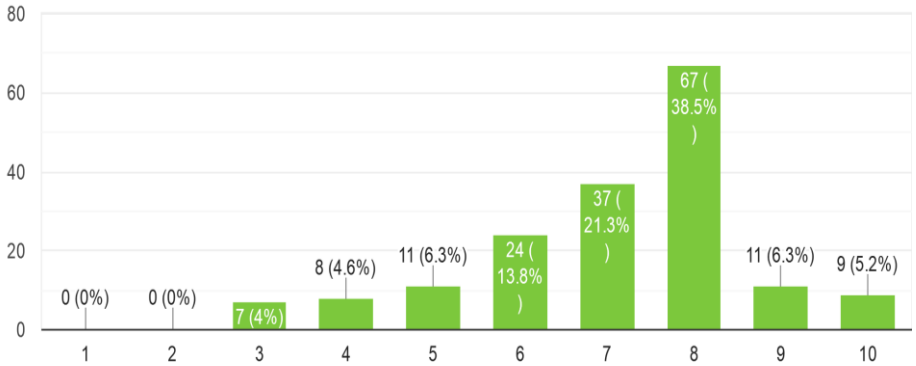


Figure 14. Plot showing the variation in number of students for different ratings in the Environmental issues and Happiness (5.3.4.1) sub-indicator

About 50% of the students rated more than 5 on the scale of (1-10) for happiness considering the influence of surroundings and environment around them (Figure 14). An unspoiled environment is a source of satisfaction, improves mental well-being, and allows people to recover from the stresses of everyday life and perform physical activities. Access to resources such as green spaces, forests and rivers is an essential

aspect of quality of life.

5.3.4.2 Rate how do you feel about environmental issues in the current situation (where '1' indicates you do not care at all and '10' shows that you strongly care about).

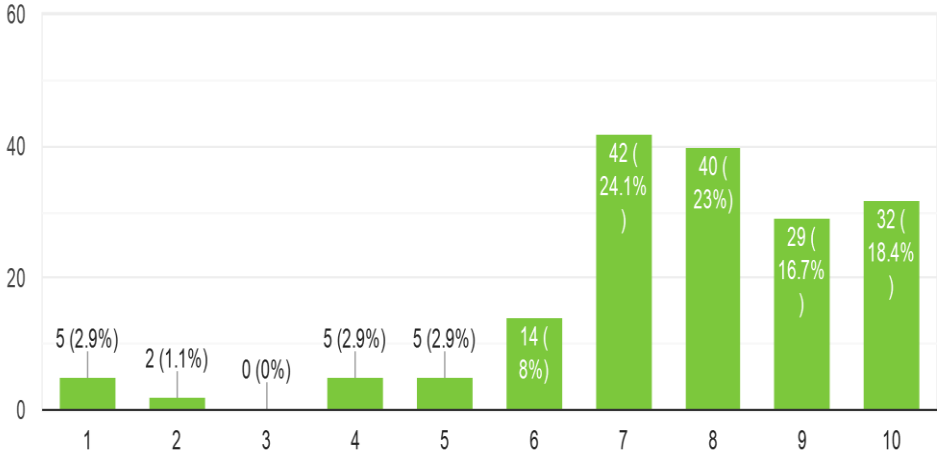


Figure 15. Plot showing the variation in number of students for different ratings in the Environmental issues and Happiness (5.3.4.2) sub-indicator

From Figure 15, Majority of the students (42% and 40%) care about the environmental issues in the current situation.

5.4 *Advanced Technology and Digitalization*

For centuries the study of happiness has been dominated by non-scientific traditions that are based on the idea that it is up to experts to judge the happiness of human beings. Thus, the tradition of imputation is inspired by the work of philosophers, social thinkers, and academics, and it is based on the fact that it is a third party who defines what the good life is! Now, in this queue, one must add the ease and satisfaction one is getting from Advanced Technologies nowadays. From a historical perspective, the relationship between technology and happiness has been a constant object of study by economists and social scientists since the advent of the Industrial Revolution. Generally, attention has focused on the relationship between material prosperity and well-being. Let us look through this indicator, what role Digitalization plays in the pursuit of happiness of one in KGP life:

5.4.1 *Technology, Environment and Happiness (1 represents strong disagreement and 5 represents strong agreement)*

The technological advancements are affecting our campus ecology and our health, time, focus, and happiness.

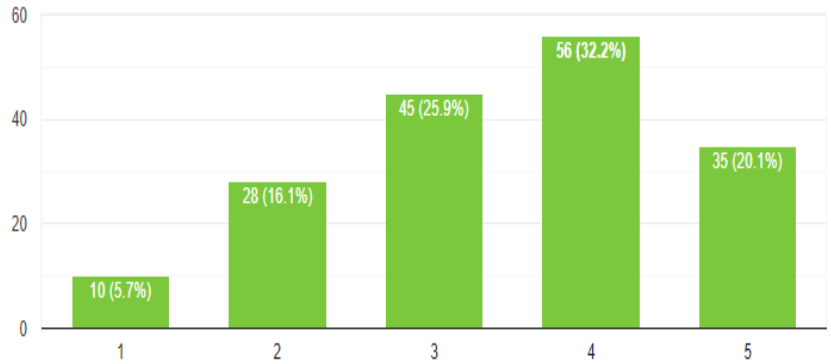


Figure 16. Plot showing the variation in number of students for different ratings in the Technology, Environment and Happiness sub-indicator

About 52.3% of students participating in the survey (Figure 16) agree to the fact that we are deviating from

true happiness and satisfaction due to the fact that these advancements bring instability; negatively affecting our environment, health, focus, and time. Although we can see a really good distribution of people concluding the mean at 4. So, we can conclude that some people also agree with the fact that, with today's growing generation, one cannot be happy without cracking the enigma of Technology.

5.4.2 *Satisfaction due to transition (1 represents strong disagreement and 5 represents strong agreement)*

The participants of the survey were requested to rate their level of satisfaction on a scale from 1 to 5, during the current transition of lifestyles due to the processes like "Smart City", "Digitalization", etc.

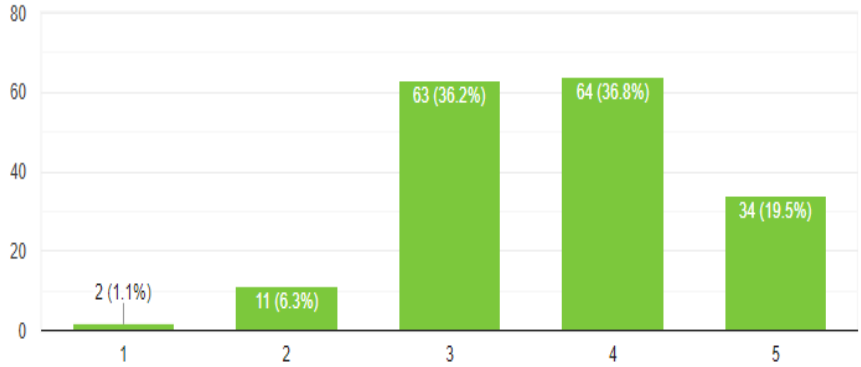


Figure 17. Plot showing the variation in number of students for different ratings in the Satisfaction due to transition sub-indicator

Many of the participants are students and most of them have agreed to change themselves quickly to cope up with upcoming transitions due to development in society. About 56.3% of people agreed to the fact (Figure 17). But there occur some problems with people who are attached more to nature. For them, these advancements are a big factor contributing to the degradation of our life and environment. Therefore, they have rated their satisfaction less.

5.5 *Environment as a factor for Gross National Happiness*

Environmental care is in the interest of every individual. Conservation of environment is measured as a key influence to GNH because the environment is believed to contribute to aesthetic and other stimulus that can be directly healing to people who enjoy vivid colours and light, untainted breeze and silence in nature's sound. This indicator was further categorized into a few sub indicators and the results of the survey are as follows.

5.5.1 *GNH calculation (1 represents strong disagreement and 5 represents strong agreement)*

'Environment' should be considered as a factor in calculating GNH (the alternative indicator of GDP) of our institution and country.

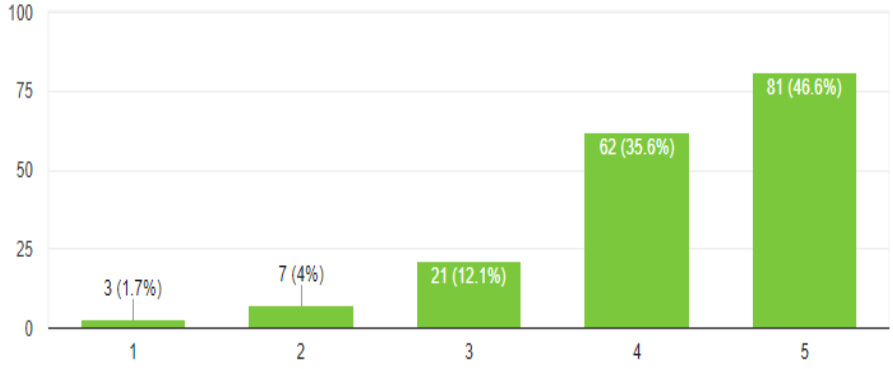


Figure 18. Plot showing the variation in number of students for different ratings in the GNH Calculation sub-indicator

From Figure 18, almost all the students agree that Environment should be considered as a factor in calculating GNH of our institution and country. This result shows that why GNH is more important that GDP for a country. Having Environment as one of the main indicators in GNH calculation makes it more important than GNH.

5.5.2 *Environment Conservation (1 represents strong disagreement and 5 represents strong agreement)*

Sustainable development and happiness heal/saves the environment.

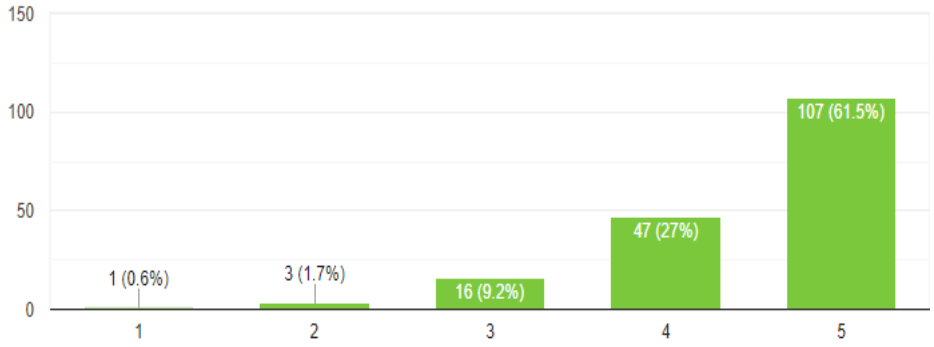


Figure 19. Plot showing the variation in number of students for different ratings in the Environment Conservation sub-indicator

From Figure 19, nearly all students Highly agree with the fact that Sustainable development and happiness saves the environment.

5.5.3 *Urbanization and happiness*

The primary purpose of urbanization is the pursuit of happiness.

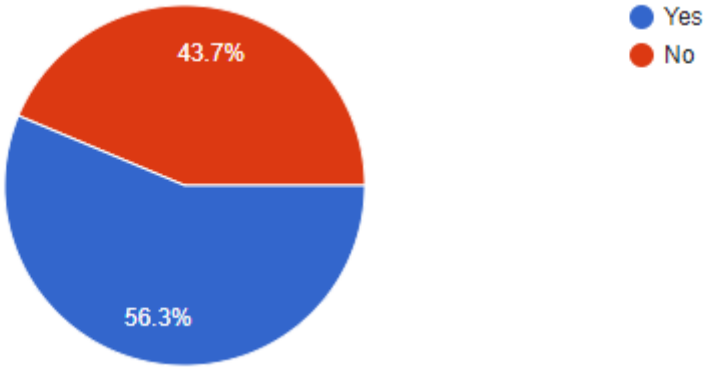


Figure 20. Pie-Chart showing the response of the different students in the Urbanization and happiness sub-indicator

The participants were asked to make decision on the above statement. In the survey (Figure 20), nearly more than half of the participants (56.35%) have positive review. 43.7% participants have chosen no to it, means that these 43.7% people think that urbanization has negative effect on happiness.

5.5.4 *Rapid Urbanization (1 represents strong disagreement and 5 represents strong agreement)*

Rate your satisfaction for the rapid changes in our lifestyle due to urbanization on campus.

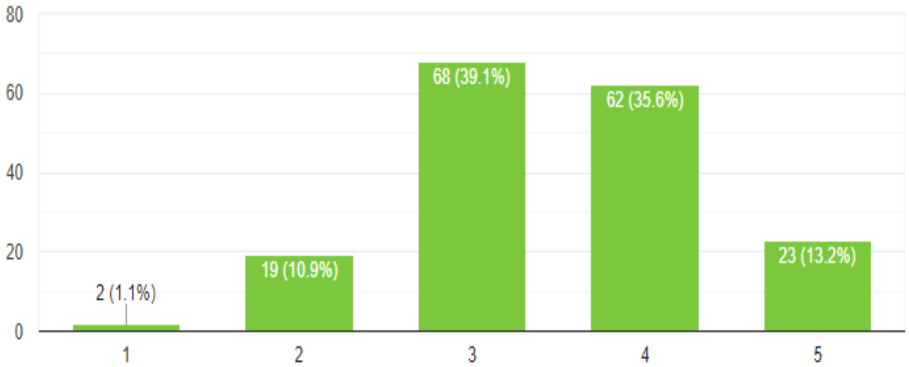


Figure 21. Plot showing the variation in number of students for different ratings in the Rapid Urbanization sub-indicator

From Figure 21, about 50% percent were satisfied with the rapid changes happening now days in our lifestyle caused by urbanization in campus. But 12% were not so much happy with the, so now the institute must step forward and has to take necessary measures so that everybody be able to cope up with it.

5.5.5 *Improvement in GNH (1 represents strong disagreement and 5 represents strong agreement)*

Environmental preservation leads to improvement in the happiness of the people of a country.

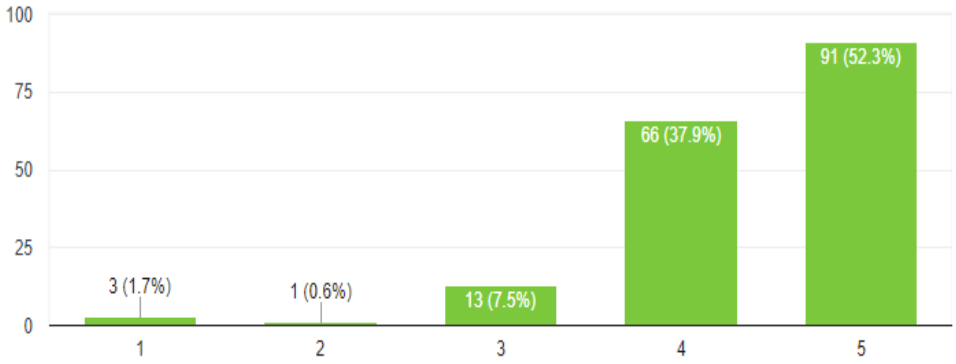


Figure 22. Plot showing the variation in number of students for different ratings in the Improvement in GNH sub-indicator

Figure 22 proves that the majority of the students agree with the fact that Environmental Preservation leads to improvement in the happiness of a country and this shows a good sign for many of them to know the importance of GNH because GNH calculation considers Environment as a factor and thereby they can get to know how much Environmental preservation is needed for a country to lead a happy life in that particular country.

6. Conclusion and Scope

Environmental conservation is considered a key contributor to Gross National Happiness because in addition to providing critical services such as water and energy, the environment is believed to contribute to aesthetic and other stimulus that can be directly healing to people who enjoy vivid colours and light, untainted breeze and silence in nature's sound [24]. Environmental conservation is not a new concept, with increasing levels of urbanization, pollution and man's never-ending greed, taking care of our environment is more important now than ever. Protecting the environment protects humanity [25]. The earth is our home, and we need it to survive, we need it so that our future generations might survive. The relationship between happiness and environment, however, is a relatively new topic of interest. A number of studies have been conducted on the intricate relationship between happiness and environmental well-being, on whether happier people are more willing to make income sacrifices to protect the environment [26], how the environment forms the building blocks of urban happiness [9] etc.

The current project conducted a study on the relationship between environment and happiness in the domain of urban issues, particularly in the context of life at IIT Kharagpur, which can serve as an effective model for a mini-India as far as the demographic of its residents is concerned. Five major indicators were selected to represent the contribution of environmental conservation to gross national happiness. It was found that the majority of people agreed to the immediate and pressing need for environmental conservation in current times, but they differed in their opinions about its implementation. While some of them felt that adequate steps are already being taken by authorities, others felt there is immediate need of intervention. Such mixed results can be attributed to the subjective nature of the question at hand, and how different people perceive the current threat to our environment in different degrees. This can also be explained somewhat by the fact that two categories of people were found, one who relied entirely on the authorities to take care of the environment and the other who



Figure 23. Correlation between the environment and happiness (People feel happier living in greener, less polluted areas and care more about environment) [27]

were ready to take initiatives themselves. In the prevalent scenario of widespread pollution and increasing levels of global warming, perhaps we need the second category of people more, so that change begins at grassroot levels. Everyone more or less agreed that rapid urbanisation and technological advancements are hampering our environment. It was also found that there is a direct correlation between the environment and our happiness (people feel happier living in greener and less polluted areas and happier people care more about the environment) as in Figure 23. Lastly, people agreed that environmental conservation should be a key factor in the construction of gross national happiness index.

Further studies can involve using a broader sampling space, such as all academic campuses in the state or an entire state. The relative comparison in environmental sustainability practices between urban and rural spaces is also an avenue of further research. Moving forward, there should also be adequate focus on implementation of environmental sustainability practices, and not just opinions on the same.

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