Emotional Attributes Of Msu-Iit's Science Students: Basis For Science Programs And Mental Health Enhancement

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Abstract. The capability of students to recognize their own emotions and those of their classmates and discern between different feelings and label them appropriately is said to affect their academic performance. Hence, this study aimed to obtain useful emotional information for the design of classroom activities and science curricula. This study determined the emotional attributes of 150 science students from two colleges of the Mindanao State University-Iligan Institute of Technology through an online survey, which harvested data during the time of the COVID-19 pandemic. The questionnaire used surveyed several aspects of emotional intelligence, which were analyzed collectively using box-and-whisker plots that allowed comparison of scores across individuals. Results showed high and low scores characterizing the study population that represent their strengths and weaknesses. Among their strengths was the ability to cooperate and collaborate in teams, which might be a natural consequence of doing laboratory and field exercises. Field trips may not be easy to conduct today because of safety protocol, but doing this poses additional value by providing opportunities for social cohesions to foster. On the other end, the students may have difficulty articulating their feelings, resulting from the lack of safe spaces inside and outside the classroom to share their opinions and ideas with others without the fear of being embarrassed or rejected.

Keywords: Emotional Attributes, Assessment, Science Programs Enhancement. Mental health Enhancement

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1 Introduction

It has been a regular practice to manipulate IQ (Intelligence Quotient) into measuring an individual's level of mental abilities. Their teachers consider anyone who achieves high test marks to be knowledgeable. However, success in life does not constitute only high IQ as many other elements construct a healthy, fulfilling life besides mental capability. Today, the educational system recognizes the critical role that emotional attributes play in learners' academic performances. These attributes define outstanding corporate leaders, successful entrepreneurs, and successful individuals. High skills of communication, interaction, and dealing with other people are part of high EQ qualities. Undoubtedly, EQ contributes to productive life experiences and optimal leadership potential. Current literature points to the EQ as the barometer of excellence on virtually any job (Saibani et. Al, 2011) Various studies sought to determine the relationships between intelligence, intelligence quotient (I.Q.), and students' academic performances. Based on terminology, these three concepts refer to three different phenomena. According to Kaur et al. (2018), intelligence means a lot. It relates to the capacity for logical and abstract thought and much more such as self-awareness, understanding, communication, emotional knowledge, planning, learning, memory, creativity, and problem-solving. The intelligence quotient is the score derived from several standardized tests designed to assess human intelligence. Finally, academic achievement indicates the knowledge attained and skill developed in the school's subjects, generally designated by test scores (Bhat, 2013). According to Parker et al. (2003), attempts to relate academic achievement with emotional, social competencies have produced many inconsistencies. Some studies, such as Wong et al. (1995), found social perception as a moderate predictor of academic performance. In this study, Wong et al. (1995) defined social perception as the ability to understand other people's emotional states. However, the study of Newsome et al. (2000) found a weak correlation between emotional intelligence and academic performance when they used the BaRon Emotional Quotient Inventory. Though studies did not meet end points however, this study increase evidence on ecology of knowledge in restructuring curriculum outcome using EQ. Further study is necessary to ascertain effect of the program based of EQ component. With this notion, EQ becomes an interesting element that can affect the students' academic performance, not only in the secondary but also in the tertiary education level. The learners have experienced years of hardships in their previous institutions, which may affect their EQ development. Emotional intelligence is the capacity to control or express one's emotions and handle interpersonal relationships wisely and empathetically. Emotional intelligence does have an impact on the professional life and academic success of a student that is taking science courses. Emotional intelligence and self-efficacy are two critical structures to be taken into account while studying the causes of academic success or failure. These structures are flexible and improvable through necessary interventions. People not believing in their abilities get disappointed while facing difficult circumstances and are less likely to operate effectively. Such people are afraid of dealing with challenging issues, and consequently, their performance is negatively affected, leading to more feelings of inadequacy.

The silent generation raised baby boomers to have the opportunity to attend college and also to receive government assistance in terms of grants or scholarships and financial aid and to be able to contribute to the economic growth of our country. Now, baby boomers have their offspring who have grown in an environment of institutional choices, dynamic technologies, and

complicated financing. Going to college was no longer perceived as a privileged class, but one's duty to patriotism and country (Bowen, 1977; Thelin, 2004; Trow, 1989). Since the 1950s, higher education has become increasingly competitive and diverse (Adelman, 1999; Pascarella & Terenzini, 2005). Students have a wide choice of choosing a degree. May it be online or on-campus programs from highly selective 4-year universities or 2-year colleges or diploma degrees. Economic unreliability has brought many changes in education today.

In this study, the researchers harvested data from science students to determine attributes of their emotional well-being that can inform science programming, especially in the content and delivery of the curriculum. This study aims to improve the academic performance of science students by providing information that could feed into the design of in-house initiatives to increase their emotional, not only mental well-being.

2 Statement of the Problem

The study's primary goal was to assess the emotional attributes of science students of MSU-IIT, which can serve as a basis for the teachers in enhancing science programs and students' learning. Specifically, this research seeks to answer the following questions:

1) What are the emotional attributes of science students in terms of:

i. Emotional self-awareness

ii. Accurate self-assessment

iii. Self-confidence

iv. Self-management

i) Emotional self-control

ii) Transparency

iii) Adaptability

iv) Initiative

v. Relationship Management

i) Inspirational Leadership

ii) Conflict Management

iii) Change Catalyst

iv) Teamwork Collaboration

v) Influence

2) What enhancement can science schools do in their:

i. Curriculum

ii. Guidance Programs

3 Methods

The researcher utilized a quantitative approach utilizing descriptive research design. This research was conducted among Science students of Mindanao State University-Iligan Institute of Technology (MSU-IIT), A total of one hundred and fifty-five (155) students enrolled in the survey. These respondents were Science students of the College of Education and the College of Science and Mathematics. Following a purposive sampling, the survey harvested data from randomly selected classes in the two colleges during the height of the COVID-19 pandemic, limiting participation to students who have a connection to the internet only. Initially, research conducted the required entry protocol requirements by asking permission from the Deans and professors of the students' colleges. The professors who agreed to participate in the survey published the survey questionnaire in their MOLE (MSU-IIT Online Learning Environment) classrooms and group chats for their students to answer. The Google forms returned answers that the respondents gave directly to the researcher's email account, both in raw and summarized form, eliminating the need for manual counting. This self-assessment questionnaire on emotional intelligence by Daniel Goleman (1995) was used in this study. Goleman (1995) found that while the qualities traditionally associated with leadership such as intelligence, toughness, determination, and vision are required for success, they are insufficient. Accordingly, truly effective leaders are also distinguished by high emotional intelligence, including self-awareness, managing emotions, motivating oneself, and showing empathy. Those with leadership potentials are also believed to have the ability to manage, influence, and inspire feelings in others. Hence, the 50-item questionnaire measures various aspects of the aforementioned emotional competencies. Using the questionnaire, the students make a personal assessment of themselves based on a five-point Likert scale. The questionnaire was validated and has a reliability measure value having Cronbach alpha of .81. Data were analyzed using SPSS version 10.

3 Results and Discussion

The emotional intelligence of the Science students is cross-tabulated to summarize the frequency and percentage distribution of the scores related to various aspects of their emotional intelligence. Embedded in the frequency and percentage tables are the mean scores and the computed standard deviation.

3.1 General Emotional Well-being of the Students

Table 1. Overall means of all category of the emotional intelligence of Science students of MSU-IIT.

	Mean	**SD**
Emotional Self-awareness	3.33	1.10
Accurate Self-assessment	3.44	1.18
Self-confidence	2.63	1.28
Emotional self-control	3.13	1.15
Transparency	3.14	1.17
Adaptability	3.34	1.15

Initiative	3.31	1.14
Inspirational Leadership	3.05	1.11
Conflict Management	3.17	1.23
Change Catalyst	2.90	1.10
Teamwork Collaboration	3.93	1.05
Influence	3.00	1.26
Grand Mean	**3.19**	**1.07**

Legend: 0-- Never, 1-1.99-rarely; 2-2.99-Sometines; 3-3.99-Usually, 4-4.99-almost always; 5-always

3.2 On Emotional self-awareness (ESA)

Table 2. Level and intensity of emotional self-awareness among the students.

	Mean	SD
Expresses own feelings	2.41	1.12
Recognizes the situations that trigger own emotions	3.59	1.12
Knows how own feelings impact own performance	4.00	1.06
Construct Mean	**3.33**	**1.10**

People have emotional hot buttons. The moment these are pushed to the limit upon hearing persons say something terrible, it catapults them to intense emotional reactions that hijack their sanity. Because of anger, people say and do things that they would regret later. Hence, mastering emotional reactivity is a core competency that everyone, including Science students, should learn.

The ability to understand and regulate their emotions is comprised of two essential features. First is the ability to identify feelings, and second, the competency to access practical coping skills (Kopp, 1989; Shonkoff & Phillips, 2000; Siegel, 1999). The data speaks of the ability of the respondents to recognize emotional pushbuttons (almost always: 30.3%; always: 23.9%). The bulk of the respondents (71%) are also aware that their own feelings could affect their performance in school. These two are already indicators of the level of emotional awareness that Science students have. The second feature on practical coping might be a challenge to them. Results show that only 2.6% of Science students were confident in expressing their feelings. A large majority say that they are only able to express themselves either sometimes (32.9%), usually (24.5%), or rarely (21.9%).

3.3 On Accurate Self-Assessment (ASA)

Table 3. Level and intensity for accurate self-assessment among the students.

	Mean	SD
Acknowledges own strengths and areas of weakness	3.53	1.21
Has a sense of humor about oneself	3.43	1.22
	3.30	1.11

Is not defensive in receiving new information or perspective about oneself		
Compensates for own limitations by working with others with the necessary strengths	3.49	1.17
Makes career choices to leverage opportunities to learn new things or broaden one's experiences	3.44	1.16
Seeks out opportunities to broaden one's repertoire of capabilities	3.43	1.19
Construct Mean	**3.44**	**1.18**

Self-assessment in education involves reflecting on and monitoring one's own academic performances (Brown & Harris, 2013). Student self-assessment is a central component of current conceptions of classroom assessment, particularly formative assessment. However, during this pandemic, self-assessments of student performances can be pretty complicated given the online and modular delivery of lessons by the teacher. Nonetheless, the respondents scored higher on the category of accurate-self review, with mean values ranging from 3.30 to 3.53. The majority (80%) know their strengths and weaknesses, responding either usually, almost always, or always in the questionnaire.

Considering self-assessments into the formative assessment should proceed with caution because of concerns and issues over validity. According to Butler (2011), the question for self-assessment is to what degree student self-descriptions and evaluations of their work are truthful or veridical. In addition, Burson et al. (2006) said that self-appraisal may be problematic because it can be biased towards individuals rating themselves more favorably. Students appraising themselves can also be more lenient as judges of their academic performances compared to teacher ratings (Fox et al., 1994).

Aware of their shortcomings, the students collaborate with those who possess the necessary strengths they lack. Nearly half of them are confident enough to display a sense of humor about themselves, which sometimes reflects a lack of insecurity. The students are either usually (32.3%), almost always (29.7%), or always (14.8%) not defensive in receiving new information or perspective about oneself. The students are willing to seek opportunities to broaden their competencies (51.6%), extending beyond student life to leverage opportunities to learn new things when exploring career choices (51%). According to Dweck & Leggett (1988), students like this are learning goal-oriented. They subscribe to an incremental theory of abilities, meaning they believe abilities to be malleable attributes.

iii) On Self-confidence (SC)

Vrugt et al. (1997) referred to academic self-confidence as the student's expectation of their ability to excel in their classes and could be an influential factor in ensuring their academic success. Based on the data, only a handful (8.4%) said they are always confident to work without the need for direct supervision. Many registered responses on sometimes (31.6%), usually (25.8%), or almost always (21.3%). They are not confident to comply with their tasks without their professors or instructors. This percentage distribution can be explained by the fact that students need supervision conducting Science experiments.

Table 4. Level and intensity of self-confidence among the respondents.

Feel's confident to work without the need for direct supervision	2.79	1.20
Believes oneself to be among the most capable for a job and likely to succeed	2.72	1.33
Is decisive	2.68	1.25
Presents self in an assured, forceful, impressive and unhesitating manners	2.61	1.23
Has personal presence (i.e. stands out in a group	2.34	1.43
Assumes significant personal or professional risk to accomplish important goals	2.52	1.33
Speaks out for a course of action one believes in even when others disagree	2.75	1.18
Construct Mean	**2.63**	**1.28**

The students also need to be accompanied by their teachers when they are on field trips. Because they are still students, most respondents were not sure they could land a job and succeed. In fact, 31% of them only answered sometimes, with only 11.6% responded always. It can also be a challenge for them to be decisive as they are still not wholly autonomous. Only 9.7% responded with ""always"" on the question about decisiveness. Like any Asian, Filipino is a high-context culture. Most of the time, it is challenging to present oneself in an assured, forceful, impressive, and persistent manner. It is easy to maintain the low-key status as evidenced by the fact that the majority of the respondents responded with sometimes (35.5%) and usually (21.9%) answers only. A small percentage (8.4%) can come in forceful and assured.

It can be pretty tricky for students to be risk-takers, given that most Science activities are resource-intensive. Scientific experiments and field works require could be costly, making it challenging to be risk-takers. When asked if they were willing to assume significant personal or professional risk to accomplish important goals, most of the respondents only answered "rarely" (21.9%), "sometimes" (28.4%), and "usually" (22.6%) in the questionnaire.

Sometimes, the need to achieve consensus in decision-making leads to group thinking. Here, one does not speak out for a course of action that they don't believe in, especially when others disagree. In fact, the majority of the respondents ticked "sometimes" (36.8%) and "usually" (25.2%) in the online questionnaire they were asked to answer.

iv) On Emotional self-control (ESC)

Table 5. Level and intensity of emotional self-control among the respondents.

	Mean	SD
Resists the impulse to act immediately	2.95	1.04
Behaves calmly in stressful situations	3.03	1.12
Stays composed and positive, even in trying moments	3.19	1.14
Calms others in stressful situations	3.34	1.27
Construct Mean	**3.13**	**1.15**

In education, emotions are only relegated to being supplementary to the learning process Hafiz (2015). However, the COVID-19 pandemic has raised emotional regulation as something that needs monitoring by academic institutions. The threat of infection and anxiety from isolation has produced a roller coaster of emotions for students. Today, more than ever, educational institutions see emotion regulation strategies as essential resources in improving students' learning, achievement, and quality in education. Hafiz (2015) said that emotion regulation and academic performance are critical domains in achieving students' life goals and objectives. Students must have the right attitude and be fortified with effective emotion regulation strategies to handle the difficulties of their daily lives, especially during this pandemic period.

The data shows that the aspect of emotional self-control is something that the students can still improve. They can be reactive and may have challenges resisting the impulse to act immediately. At times they can be composed and positive in trying moments. But it may be challenging for them to behave calmly in stressful situations without doing anything. What is essential, however, is that they tend to calm others in such stressful conditions.

v) On Transparency (T)

Table 6. Level and intensity of transparency among the respondents.

	Mean	SD
Behaves consistently with own stated values and beliefs	3.47	1.03
Publicly admits to mistakes even when it is not easy to do so	3.45	1.17
Confronts unethical actions in others	2.79	1.17
Acts own values even when there is a significant risk	2.97	1.12
Adaptability	3.55	1.06
Construct Mean	**3.14**	**1.17**

Transparency is often talked about as the communication of ideas or goals. It is about conversing underlying, hidden assumptions and making them clear to all parties. But this is only limited to what is called cognitive transparency. Rarely do people from the academe talk about clear and open communication of feelings in their conversations. Kondrath (2008) posits that when people hide their feelings from others, the waters get much murkier than when assumptions, goals, and rationales are hidden or unexplained. And the confusion or obstruction happens more rapidly when feelings are obscure or opaque than when cognitive beliefs are hidden. When communications are suppressed and hidden, the latent conflict will eventually surface and erupt when conditions become ripe.

The study's respondents find it difficult to be transparent with their thoughts and opinions to others, even if the other has already committed mistakes. In fact, it is not easy for them to call out the unethical actions of others, as evidenced by the mean score of 2.79, which is the lowest in the transparency category. The inability to air out their opinions to others presents a moral dilemma, especially when what they are saying or doing is not consistent with their values and beliefs. In fact, only 17.4% said they were behaving according to what they believe is right. In addition, only 97% act based on their own values when confronted with danger and risk. The majority answered "usually" at 33.5%. The students can also be very

compromising, based on the fact that they could almost always (32.3%) quickly adapt to the opinions and ideas of others (Mean: 3.55). However, the combined percentage of 79.3% of total respondents is good, who said they can publicly admit to mistakes even when it is not easy to do so (Mean 3:45).

vi) On Adaptability (Adap)

Table 7. Level and intensity of adaptability among the respondents.

	Mean	SD
Willingly changes ideas or perceptions based on new information or contrary evidence	3.70	1.01
Applies standard procedures flexibly	3.63	1.00
Smoothly juggles multiple demands	2.98	1.12
Is comfortable with ambiguity	2.94	1.28
Adapts by changing overall strategy, goals or projects to fit the situation	3.47	1.09
Construct Mean	**3.34**	**1.15**

The school is a complex environment of people coming from a lot of cultures. Interacting with people from diverse backgrounds can be stressful because of cultural differences. Cui and Awa (1992) said that for students to be successful in their academic endeavors, they should be cross-culturally adaptive. According to them, successful cross-cultural adaptability involves empathy, flexibility, patience, role flexibility, tolerance for ambiguity, and the ability to establish and maintain relationships.

In this study, adaptability could mean a lot of things. For example, most students are not very stiff with standard procedures (mean: 3.63). They exhibit a certain level of permissible flexibility and change ideas when presented with new information (mean: 3.70). They can do this by changing their overall strategy, goals, or projects to fit a given context (mean: 3.47; percentage of almost always and always responses: 49.6%). Some admit they can be comfortable with ambiguity as they believe that circumstances can also be fluid (mean: 2.94). For this population, grit is never a way to move forward with life. : 2.94). For this population, grit is never a way to move forward with life.

vii) On Initiative (I)

Table 8. The ability of the respondents to do things based on initiative.

	Mean	**SD**
Finds and acts upon present opportunities	3.30	1.00
Acts rather than simply waiting to study actions of others	3.07	1.13
Cuts through red tape and bends the rules when necessary to get the job done	2.75	1.34
Monitors customer or client satisfaction	3.49	1.13
Takes personal responsibility for resolving customer or client problems non-defensively	3.39	1.04
Make oneself available to customers or clients	3.54	1.06

Matches customer or client needs to services or products	3.55	1.02
Addresses the unexpressed needs of the customer or client	3.30	1.10
Acts as a trusted advisor to a customer or client over time	3.43	1.18
Construct Mean	**3.31**	**1.14**

In general, personal initiative results in an individual taking an active and self-starting approach to work goals and tasks and overcoming barriers and setbacks (Frese et al., 1997). One of the consequences of performing an initiative is that students can change their environment to accommodate their personal and communal needs. This is in stark contrast to a passive process characterized by doing what one is told to do, giving up in the face of difficulties, and reacting to environmental demands.

In the respondent's personal initiative, the lowest score of 2.75 in this category is their willingness to cut through red tape to get the task done. Science students are adherent to process, especially when it comes to experimental procedures. A resounding 31.6% of them said they are only willing to do the short-cut sometimes. More than a third (36.8%) of the respondents were occasionally ready to act upon present opportunities, mainly when it addresses the needs of others (mean: 3.39; almost always and always responses: 49.7%). However, most exercise due diligence first before acting on something. The data shows the low percentage distribution of only 12.3% for those who were always willing to act rather than simply wait to study the actions of others.

viii) Inspirational leadership (IL)

Table 9. The ability of the respondents for inspirational leadership.

	Mean	SD
Leads by setting vision and direction rather than through formal authority or positional power	3.13	1.13
Stimulates enthusiasm and makes work exciting	3.12	1.21
Consistently and visibly leads by example and sets a clear standard for teams and colleagues	3.06	1.21
Inspires others to action by articulating a compelling mission and vision	3.14	1.24
Construct Mean	**3.05**	**1.11**

Becoming an inspiration to others comes from creating an environment that motivates them to be more engaged and committed to sharing a common belief, vision, and goals. According to Paolini and Bryan (2015), an inspirational leader is a visionary who grows, develops, and builds others. They are also effective communicators who, upon speaking, helps provide a sense of trust, empathy, and a feeling of safety that will allow others to speak up and perform well.

Concerning the statements mentioned earlier, the data reveals that only 12.3% of the students possess the qualities of an inspirational leader that can lead with a vision and direction. Others may exhibit situational leadership (usually: 29%) and resort to position power to lead the group or team members. Words are potent as they can inspire group members and constituents into action, especially when a

compelling mission and vision are articulated. Data shows that only 18.1% of the students can speak these missions and ideas very well. Also, only 12.3% were consistent in leading by example as words speak louder than words.

ix) On Conflict management (CM)

Table 10. The ability of the respondents to manage conflicts.

	Mean	SD
Brings disagreements and grievances into the open	2.61	1.27
Communicates the positions of those involved in a conflict to all concerned	3.05	1.14
Focuses disagreements on the issues or actions involved rather than on the person	3.25	1.24
Helps de-escalate conflicts	3.35	1.14
Finds a common idea to which all parties in a conflict can endorse	3.39	1.16
	3.31	1.14
Construct Mean	**3.17**	**1.23**

People with high levels of emotional intelligence consider their own emotions and other's emotion, discriminate among them and use the information to guide their conflict-handling styles (Salovey & Mayer, 1990; Morrison (2008). Emotionally intelligent individuals can regulate their own emotions in dealing with interpersonal conflict in a constructive manner.

The results show that the students find it challenging to bring disagreements grievances into the open, as evidenced by the mean score of 2.61. Based on the percentage distribution of responses, most students can only air out their disagreements sometimes (28.4%). Only 12.9% possess the skill for roundtable geometry by communicating the positions of those involved in a conflict to all concerned. This is an important skill to learn individual contexts in understanding people's attitudes and behavior towards conflict. About 18.1% focuses disagreements on the issues or actions involved rather than on the person, which minimizes the possibility of raising people's enemy images against each other. Just more than 40% of them have intentions to address and de-escalate the conflict. They can also be compromising in responding to disputes by finding common ground for a win-win solution.

x) On being a Change Catalyst (CC)

Table 11. The innate ability of the science students to become change catalysts.

	Mean	SD
States a need for change	3.19	1.05
Expresses an explicit vision for change to those effected	3.17	1.02
Enlists others in pursuit of a change initiative	2.95	1.13

Removes barriers to change	2.78	1.01
Models the change expected for others	2.95	1.08
Personally leads change initiatives	2.81	1.14
Takes a strong, public stand to advocate change despite opposition	2.74	1.21
Construct Mean	**2.90**	**1.10**

Nothing in this world is permanent except change. Organizations change for the better. However, change usually is associated with chaos, uncertainties, and psychological reactions (Foltin & Keller, 2012). In this regard, emotionally intelligent leaders are central to successful organizational change. These are individuals who can effectively facilitate change and manage the emotions involved in change. It enables leaders to identify the talents needed to build a winning team and overcome resistance to change.

Based on the result, there is still room for improvement regarding Science students being catalysts of change, as evidenced by the high percentage of ""sometimes"" responses. First of all, only 7.1% of them were always personally involved in leading change initiatives. Only 6.5% always model the change they want to attain. Only 9% take time to advocate what they believe could positively transform their communities. A small percentage (11%) always urged others to participate in their change initiatives. The good thing is that a number of the students registered responses that were usually and almost always.

xi) On Teamwork and Collaboration (TC)

Table 12. The ability for teamwork and collaboration among the science students.

	Mean	SD
Maintains co-operative working relationships	3.88	1.06
Shares information to faster collaboration	3.99	1.03
Expresses positive expectations or respect for others at work	4.19	0.99
Values, solicits and uses others input	4.03	1.01
Identities and encourages opportunities for collaboration and within groups	3.99	0.99
Actively promotes a friendly climate, good morale and co-operation	4.15	0.99
Promotes group reputation with others	3.91	1.08
Builds team spirit by creating symbols of identity and pride	3.70	1.20
Construct Mean	**3.93**	**1.05**

Luca and Tarricone (2001) find a strong correspondence between student's emotional intelligence and their abilities to foster team harmony. Furthermore, Farh et al. (2012) saw higher teamwork effectiveness in individuals with higher emotional intelligence and perception in job contexts. This subcategory on teamwork and collaboration by far received higher scores in all indicators, especially

on expressing positive expectations or respect for others at work that garnered a mean score of 4.19. Based on the same data, 51.6% of the respondents always do this. Nearly half (49%) of them actively promote a friendly climate, good morale, and co-operation, which explains the mean score of 4.15. Valuing, soliciting, and considering other's input is very important in fostering a climate of camaraderie and teamwork. This received a score of 4.03.

xii) On Influence (Inf)

According to Njoroge & Yazdan ifard (2014), one of the characteristics of emotionally intelligent individuals is their ability to influence without formal authority. They can understand the bigger picture, including the larger vision, strategy, and culture. An influential leader understands the internal dynamics and politics in communities. Within the community, there exist multiple sub-cultures with their own norms, patterns, and preferences.

Table 13. The ability of the science students to influence and convince others.

	Mean	SD
Expresses concern with own images and reputation, or that of one's organization	3.01	1.22
Uses factual arguments to persuade and influence others	3.48	1.18
Takes symbolic actions to have a specific impact on the audience	3.15	1.23
Convinces by appealing to people's self-interest	3.12	1.15
Gains the buy-in of influential parties and enlists their help in convincing others	2.73	1.20
Gets people to buy-in or take ownership of ideas or plans	2.68	1.19
Develop broad, behind the scenes support to increase persuasive impact	3.12	1.22
Construct Mean	**3.00**	**1.26**

Successful influencers understand and value these differences and can use this understanding in their efforts to move forward. Based on the results, the students may still have room for improvement on being an influencer as scores are generally lower than that teamwork and collaboration. They featured a low score of 2.73 in gaining the buy-in of influential stakeholders and enlisting their help in convincing others. Also, only 6.5% of the students do this. One of the measurements of influence is when people buy one's ideas. In the current study, the score for buy-in is only 2.68, which is relatively low. This score of 2.68 can be explained by the percentage distributions of 31.6% rarely, 29% usually, and 20% almost always responses. Only 16.1% of them were always conscious of their organization's image in their immediate community. Although, the good thing for Science students is that 51% of them either almost always or always use factual arguments in persuading and influencing others.

B. Proposed Design for an Intervention for Science Students

Goel and Aggarwal (2012) mention that confident people feel socially competent, mature emotionally, sufficient in intelligence, success, satisfaction, firm, optimistic, independent, confident, constantly moving, and have leadership qualities. Self-confidence allows students to believe in their ability, not give up quickly, and perform all tasks provided independently. Unfortunately, the results of this study show that the students score low on self-confidence and capacities to be positive change agents. Therefore, it is essential to identify spaces in the Science curriculum where activities and learnings can be instilled to boost students' self-confidence.

At MSU-IIT, there are some science courses where students could learn the value of self-confidence. These include Biology courses, such as Ecology, Environmental Science, Human Ecology, and others, where there are discussions on organismal interaction, including individual humans. These competencies could be entrenched in the delivery of the course pre-pandemic as some recommended activities are available on the internet. However, because of quarantine restrictions, activities that help boost self-confidence may be confined only to online methodologies.

According to Nurhayati et al. (2017), there are two ways students acquire self-confidence. The first one has something to do with the learning process. Students are expected to be active, especially in understanding the concepts described by teachers that ultimately can improve self-confidence. Secondly, it is suggested that students engage in collaborative learning as an alternative learning model in their online classes, according to Nurhayati et al. (2017). According to ILaal & Laal, 2011), collaborative learning involves grouping students to solve a problem, task, or product creation. Students in the group decide and find out how they are solving a problem, task, or product without direction from the teacher. Therefore, the freedom given in collaborative learning really emphasizes students actively participate in joint missions. This will undoubtedly make students better understand the concepts they are learning and can help develop self-confidence. A sample activity and its learning objectives are described below.

Title of Activity: Use of Appreciative Inquiry in addressing environmental issues
Learning Outcomes: This activity provides a space that allows students to express their opinions and feelings without fear that giving them this opportunity would help boost their confidence.
Learning Objectives: The students are engaged in the four-step Appreciate Inquiry (A.I.) and collaborative learning in determining action plans to solve environmental issues. The steps in A.I. include four Ds, namely Discovery, dream, Design, and destiny, that is described more in detail below:
a) In the first step of Discovery, the students are presented with images of various environmental issues. These pictures can come from the internet but should be appropriately acknowledged. The photos could also come from the personal collections of the instructors. These images are uploaded as a template to a freeware called MURAL, which functions as a digital whiteboard or a workspace that works best on visual collaboration. Upon presenting the images in MURAL, the students work collaboratively to express their opinions and feelings concerning the environmental issues. The students can use the digital meta cards embedded in the freeware to express these ideas and feelings. The students are instructed to keep what they hear from the discussions to ensure that everyone would feel comfortable and safe participating. If the class is large, the students can meet in small breakaway rooms to give each other a chance to speak.

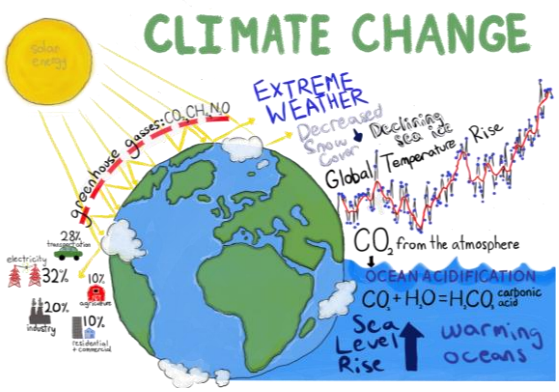

Figure A sample image can be uploaded to MURAL, a digital workspace where students can collaboratively design solutions to environmental issues. Image courtesy of The Rubicon website https://www.rubiconline.com/.

b) The second part would still dwell on their MURAL. Still, it would focus on Dreams about what they would like to see concerning environmental issues. This part would involve a visioning exercise where students are asked what they would like to see in the future. In this stage, the students will still use the digital meta cards in the MURAL to articulate their dreams and aspirations about the environmental issue. All are required to participate in breakaway sessions or small circle activities.

c) Cognizant of their dreams and aspirations, the students are now ready to Design and develop action plans to achieve these visions. The students may put their action plans in Meta cards that are shaped like footsteps. This step requires a lot of planning and input from reading secondary literature about best practices and lessons learned.

d) In this last step called Destiny, the students construct a stakeholder map to identify individuals, organizations, and institutions with who they can work to address the environmental issue. All of these discussions will still take place in MURAL. This part serves as a call to action for students to implement the initiatives, fulfilling yet another competency on becoming catalysts of change.

Exit interviews can be arranged to harvest narratives as to the usefulness of A.I. in allowing meaningful participation of the students and whether it impacts their level of self-confidence. These interviews can be done online or offline and in partnership with the Guidance and Counseling Office of MSU-IIT. This is where the guidance may, from time to time, recruit students from the Science classes to regularly check on their emotional intelligence. Therefore, this partnership calls on an active role of the Guidance and Counseling office in the monitoring and evaluation of the A.I. program on the students' emotional intelligence.

Msukwa et al. (2003) pointed out the importance of using Appreciative Inquiry. It discusses what works best to resolve an issue rather than delve most of the time into the problem. The use of A.I. makes it less heavy on the part of the student because they would not dwell on negativities. Instead, they would work to harvest best practices and lessons learned, a pause of positivity. On the aspect of collaborative learning, Goodsell et al. (1992) said it makes students more focused on expressing ideas in the classroom. When doing collaborative learning, students build their confidence and experience in speaking thoughts they have when answering questions, listening carefully, and responding to questions from other friends. They develop their ability to stay focused, maintain an idea, build relationships with some students and learn how to politely reject or accept other student's opinions.

4. Conclusions and Implications

The following are the conclusions based on the findings of the study:

1. Science students are typically timid and cannot articulate their feelings, especially those with conflicts. It is imperative to note this as input to the curriculum on how organisms and people respond to stimuli from the environment and other organisms.

2. Science students typically could be very technical in acquiring and processing their lessons, which has a downside. The downside is that as human as they are, Science students also need space to communicate their feelings, whether ill- or happy ones, to their classmates and peers.

3. The ability to work well with others is also an emotional attribute required in scientific collaborations. Fortunately, working with others is a characteristic shared by many of them. Being a team player is one of Science students' competencies in doing field works, laboratory exercises, and writing reports. What is needed is how the process can be inclusive so that every student may have the chance to lead their groups or teams. Usually, leading a group is a privilege given only to a few students.

4. Reflections about oneself and the capacity to carry out self-introspections are essential if people truly welcome changes for them to be better. Sadly, not all have this self-evaluation ability. Self-assessments also mean students have to learn from constructive criticisms other people make towards them.

5. In this study, students are always open to receiving feedback from other people, whether positive or negative. This phenomenon needs to be incorporated into Science students' core competencies as sometimes they get this idea that they need to defend to the death their opinions. Communication for them is debate, seldom dialogue.

6. The respondents exude self-confidence in all their undertakings, including working autonomously without needing direct supervision.

7. Science value innovation and creativeness, which does not happen when there is full of insecurities. Science students, therefore, need self-confidence, not only in performing tasks but also in communicating their findings and sharing their thoughts about science issues.

8. To sell their ideas, science innovators need to present themselves well in public. They need to trust their system and their being. The trait of self-confidence still needs improvement among the students. A few of the students can maintain composure amid stressful episodes. This composure is vital in maintaining emotional self-control.

9. Since most science students have to do field works or laboratory experiments, they have to keep their presence in times of distress. They should also have to work smart, which means they don't act based on impulse. They have to stay calm.

10. Unfortunately, the initiative to act and not wait for others to address a problem or issue is a trait found in a few respondents. The COVID-19 pandemic taught us the value of innovation and volunteerism in our Bayanihan approach to mitigating the pandemic's impacts. Our country needs initiative from many of our science majors to contribute something to the pandemic response.

11. Sadly, only a few of our students always leads by setting vision and direction. This data also means that not all who perform well in their academe have leadership potentials. It still needs further enhancement.

12. Aside from becoming leaders, science students also need to be trained to become catalysts of change, requiring active citizenship skills.

13. The majority of the respondents exhibit avoidance behavior regarding settling disputes, as evidenced by the dismal number who can always thresh out grievances into the open. Others can dialogue with conflicting parties only sometimes. Conflicts are part of people's everyday lives. It matters a lot how people respond to resolve conflicts.

14. Since most of the science subjects' activities are by teams, many respondents responded to cooperation and collaboration. Despite having more who answered positively, there are still those who still need capacitation to foster friendly cooperation and trust.

15. Science students argue based on empirical data as they have their formal training on this. However, reality tells us that being a good leader must balance factual arguments and symbolism.

5 Recommendations

5.1 Curriculum

1. Lessons on ecology need not be limited to studying the interactions between humans and other forms of organisms. It can also include topics on human ecology that tackle communication systems, consisting of practical ways to talk to other people non-violently and connect peacefully to everyone.

2. The curriculum needs to integrate topics about the physiological basis of human behavior to understand how genes and environmental factors interact to produce phenotypic characteristics. These lessons are essential to raising awareness that Science students could do something to override gene expression, which runs contrary to genetic determinism. Students need to understand that they can act based on free will and their own volition to behave within the norms of society.

3. Lessons on human ecology may include topics on bioethics. Despite being inclined to Science, the students also need to be aware of ethical considerations to behave within the bounds of society's norms. Human as they are, Science students need to act consistently along with shared value systems. Very few can rebuke the unethical actions of others. Ethics are essential as a precaution to innovations that go wrong such as genetically modified organisms and biowarfare. Science products can see no boundaries, some of which may pose a danger to man and society.

4. Exemplars in participatory facilitation, especially for a virtual class, should be collated, taught to teachers, and implemented in delivering the lessons to encourage meaningful discussions.

5. Aside from their subject on Ecology, the students can learn volunteerism in their Biodiversity subject, where they learn the value of initiating interventions that positively impact their communities. These two subjects need not dwell on theory only but may also focus on how these lessons translate into pragmatic solutions to environmental problems in their communities.

6. Regular conduct of Lesson Studies might benefit the teachers and students to find ways to optimize cooperation and collaboration among classmates in virtual classes. Group work is challenging to perform given the limitations in the students' internet connectivity and digital skills.

7. In their Bio seminar classes, Science students may learn to use different platforms for effective communication, including the use of meta cards in limited face-to-face sessions, PowerPoint presentations, and online apps for virtual learning.

5.2 Guidance and Counseling Programs

1. The Guidance and Counseling office may engage the students in activities where they learn to detect emotional push buttons for them to know when and where they might be vulnerable, and at the same time, manage the impacts of breakdowns on their academic performance.

2. Collaboration between the Guidance and Counseling Office and the College of Arts and Social Sciences might be needed to enhance the subject's content on "Understanding the Self" to lessen the gap between theory and practice. The Guidance office may provide listening sessions to harvest suggestions from students on localizing the learning materials for the subject and making it more appropriate to MSU-IIT students.

3. The Guidance and Counseling Office may also collaborate with the Office of the Vice-Chancellor for Student Services to offer training on inspirational leadership for the youth. Some of our Science students would become managers or heads of agencies in the future. Thus, they need to learn the value of inspirational leadership, which is different from leadership based on position power.

4. Science students need to learn skills in managing and resolving disputes, which may become vital, especially when handling science projects already. Thus, science students must undergo training on conflict management to prepare themselves for unforeseen disputes in the future. The Guidance office may design this type of training in collaboration with the Institute for Peace and Development in Mindanao of MSU-IIT. Alternatively, the Guidance office may also assist professors teaching Fundamentals in Peace Education to enhance mediation and negotiation.

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