

## **Creativity and Innovation in Research: The Perceptions of Malaysian Postgraduate Students**

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### ABSTRACT

*The 21<sup>st</sup> century global market demands a highly skilled workforce that is intellectually active, creative, innovative, articulate, adaptable and capable of critical thinking. Consequently, Malaysian higher education institutions of the 21st century will have the responsibility to ensure the targets are achieved (Ministry of Higher Education Strategic Plan Report, 2007). Some strategies have been suggested by the Ministry of Higher Education to achieve the targets of producing researchers who are creative and innovative. This research sought to investigate the perceptions of Malaysian postgraduates on creativity and innovation in research. A survey of a selected group of postgraduates based on a convenience sampling technique was carried out to elicit relevant data. Quantitative data was analysed and presented in terms of means and percentages. Descriptive data was analysed thematically and categorised. The findings revealed that the respondents were aware of the national higher education agenda on enhancing research and innovation. Likewise, they were able to provide descriptions of creative and innovative researchers. However, they indicated that much more could be done in higher education institutions in order to prepare them to become creative and innovative researchers. Their suggestions include revising the curriculum in particular the content, assignments and assessment. Most importantly, they highlighted the need to include them as key players in research activities and to participate globally. These*

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*findings have direct implications for higher education policy makers, curriculum designers and postgraduate instructors.*

**Keywords:** *postgraduates, creative and innovative researchers, Higher Education Institutes*

## **Introduction**

Vision 2020 emphasizes the demand for a creative and critical society. Additionally, the 'Human Capital' proposed by Tun Abdullah Ahmad Badawi when he was the Prime Minister of Malaysia in the Ninth Malaysian Plan (2005) further elevates the importance of a thinking society. During the tabling of the Ninth Malaysia Plan in March 2006, the Prime Minister asserted that,

*Development of quality human capital will be intensified. The approach must be holistic and emphasise the development of knowledge, skill and intellectual capital in fields such as science technology and entrepreneurship. Simultaneously, we must develop a culture that is progressive, coupled with high moral and ethical values. This is what is meant by human capital with First-Class Mentality.*

*Source: National Higher Education Action Plan 2007-2010.*

As information and knowledge are the key factors to the success of a nation, it is necessary for the society to be made up of individuals who are creative and critical. Several researchers (The Graduate Quality of University Experience, 2001; Hardman, 2008; Faizah and Hazadiah, 2009) have examined the experiences of graduates while at university. One of the research studies is a joint project between the Council of Graduate Students and the Graduate School at the Ohio State University (2001). Basically, the research focuses on the graduates' experience. The project has identified aspects that the university was doing well and those that would require changes. Hardman (2008), on the other hand, investigated how universities could provide their students with "a rich learning environment in which they are taught to reason and think critically, and to develop a range of attributes needed by employers..." (p. 31). In Malaysia, Faizah and Hazadiah (2009) assessed the needs of the adult learners who were pursuing their postgraduate studies at a local public university. They found that in the government's attempt to transform

higher education and accelerate the innovative and research culture in the universities, assistance through revised policies and practices may be required to enable more adults to re-enter higher education.

In the last sixty years, adult learners have become very visible in higher education across the globe as expanding advanced learning programs and credentials by governments, professional bodies, business entities provide equity and access to working adults. A ten year research program (1986-2006) conducted in the USA with adults returning to school identifies several reasons, the primary one being the desire to equip themselves with knowledge and skills needed for their careers and better prospects (Aslanian, 2007). In a developing country like Malaysia, the prime reason adult learners are returning to school is similar (Mazanah, 2001). In aligning itself to the framework of a knowledge economy, higher education is challenged to reframe its mission.

A more inclusive culture in providing training and knowledge premised on research innovations, collaboration with companies as well as global partners to produce knowledgeable and skilled adults is seen as desirable. This points out to the fact that “adult learning has taken on a much higher profile in the last decade, as OECD economies and ageing societies are increasingly knowledge-based” (Office of Economic Cooperation and Development, 2005, as cited in Kasworm, 2007, p. 25). The Malaysian government has made public its attempt to elevate the Malaysian economy through knowledge (News Straits Times, 2nd April 2010). This attempt is described in the New Economic Model (NEM) which was developed by the National Economic Advisory Council (NEAC). Among others, the new model suggests approaches the government could take in facilitating the knowledge-based society in promoting more local than foreign experts. The availability of local experts is an asset in attracting international companies to invest in the country.

In the 21<sup>st</sup> century, economies compete by producing “innovative products and services at the global technology frontier using the most advanced methods” (Porter, Ketels & Delgado, 2007 as cited in Faizah and Hazadiah, 2010, p. 56). Fully developed countries require a workforce equipped with multiple intelligences to translate their business models to international marketplaces as they have a high capacity for innovation. Multiple intelligences include verbal intelligence, problem solving skills and the ability to offer “cross-border perspectives and solutions”, cross-cultural intelligence and environmental intelligence which would enable the workforce to adapt to change. The Ewing Marion Kauffman

Foundation also observed a similar emphasis when they claim that “fueling creativity, innovation and adaptability that are the hallmarks of competitive, high-growth and emerging industries requires a highly skilled, creative and nimble workforce” (2007 as cited in Faizah and Hazadiah, 2010, p. 57). At this juncture, it is understood that creative, innovative and educated adults are required to fuel the global economy.

The National Higher Education Action Plan outlines aspects that will transform the quality of human capital by focusing on all the necessary attributes that define a First Class Mentality. As stated in the Action Plan,

*...This transformation plan aims squarely on holistic human capital (modal insan) development, to produce Malaysians who are intellectually active, creative and innovative, ethically and morally upright, adaptable and capable of critical thinking. The model human capital would also need to be well-rounded individuals with an appreciation for humanistic pursuits such as the arts, culture, sports and volunteerism. This process will create the environment necessary for the development of an individual to find and fully achieve his or her personal potential.*

*Source: National Higher Education Action Plan 2007-2010.*

Several personal attributes are associated with “creative thinking” as postulated by Rhodes (1961), Gowen (1972), Taylor (1976), Davis (1983) and Starko (1995). The creative person is someone who has the following characteristics: imaginative, curious, open, objective, flexible, sensitive to sensory stimulation, humorous, confident, and willing to try something new, to name a few. Nonetheless, according to Starko (1995) and Chuah (2004), creative thinking is quite likely to be more than the listed characteristics put together.

To further understand creative thinking, it is also wise to understand the process which leads to creativity. According to Razik (1966, p. 160),

*Creative thinking involves the ability to produce original ideas, to perceive new and unsuspected relationships, or to establish a unique and improved order among seemingly unrelated factors. Creative thinking does not involve just one kind of behaviour. It operates in various fields of human endeavour. It is potential that all people have, but to different degrees.*

In short, creative thinking is best understood by understanding the process one undergoes in order to get ideas which are original. It is also obvious from the descriptions of creative thinking that its aim is to stimulate curiosity and promote divergence.

Creative thinking is often associated with being innovative. UNESCO has defined “innovation” as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (cited in UiTM, 2010). On the same note, Hearn (2010) claims that innovation is about introducing new processes and ways of doing things and revolutionizing how things were done before. She further elaborates that innovation is not only about making improvements as innovation also entails discoveries and changes.

The idea of being innovative is best described by Warlow (2007). The following is his list of attributes of someone who is innovative.

1. Curious; constantly questioning things
2. Open to new ideas; putting oneself in situations where one can receive stimulation
3. Dare to be different; being prepared to act against accepted or conventional wisdom and challenge the unchallengeable
4. Be ready; as innovative ideas can strike at any time, there is a need to capture them before they disappear from the mind
5. Persistent; time is needed in finding the solutions which are innovative
6. Collaborate; ideas can be thought of when working with others

There is a relationship between being creative and innovative. According to Tucker (2008, cited in UiTM, 2010, p. 6)

*...coming up with ideas and bringing them to life. Hatching ideas is the ‘creative’ part; bringing them to life successfully in the form of a new product or service or management method is what makes a raw idea an innovation.*

However, the report from NEAC (2010) concludes that creativity and innovation have yet to reach a sufficient level in Malaysia. According to the report, “... Efforts to innovate and create have been insufficient. The weak track record of domestic innovation in Malaysia is reflected by the comparatively low number of researchers” (NEAC, 2010, pp. 5 – 6). The report further asserts that,

*The Department of Statistics reports that in 2007, 80% of Malaysia's workforce received education only up to Sijil Pelajaran Malaysia (SPM). Skill shortage, together with complaints about inadequate creativity and English proficiency, consistently ranks high among the top obstacles faced by firms according to studies on Malaysia's investment climate.*

*(NEAC, 2010, p. 6)*

Nonetheless, the government aims to encourage research and innovation. In his 2010 Budget Speech, the Prime Minister asserts that,

*We were successful in the past in transforming the economy from agriculture to industrial-based. We now have to shift to a new economic model based on innovation, creativity and high-value added activities. Only then, will we be able to remain relevant in a competitive global economy.*

Professor Emeritus Tan Sri Dato' Dr Syed Jalaludin Syed Salem, a National Distinguished Academic Award winner for 2007 relates the responsibility of higher education institutions in providing relevant experiences to the students in an effort to harness their creativity and innovation in his talk entitled, "Innovation and Best Practices". According to him,

*The novel purpose of the establishment of a university aspires to provide knowledge, establish scientific realm and enhance humanity relevance in sustainable living. Hence, a fine reminder is that the university is not all about research as it has another major responsibility, and that is to provide quality education... In providing better education, our students are to be given the opportunity to excel in innovation and creativity".*

*(Syed Jalaludin, 2009, p. 12)*

Some of the strategies suggested by the Ministry of Higher Education to achieve the targets of meeting the 21st century challenge in producing researchers who are creative and innovative include;

- i. Doubling the efforts towards global and top notch research universities
- ii. Strengthening research centres of excellence at public universities in prioritised and important areas
- iii. Developing researchers' critical mass through postgraduate research programmes at public universities

- iv. Increasing the involvement of public universities in research activities and innovation based on the aim of the national innovation
- v. Increasing the integration between public universities' research and global research society
- vi. Upgrading the research and publication quality
- vii. Increasing the commercial activities of the R & D products

Literature has suggested some psychometric assessment of creativity (Cooper, 1991; Torrance, 1981; Torrance 1995; Cropley, 2001). Torrance (1979) posits that creativity assessment can be done by two primary methods; the cognitive approach and the personality approach. Cooper (2000) claims that these approaches can measure both the creative person and the creative process. The personality approach measures creativity as a set of personal attributes or characteristics which developed at a young age and is stable over time. According to Cooper (2000), the California Psychological Inventory and the Myer-Biggs Personality Test are examples of the personality approach assessment. The cognitive approach, on the other hand, measures creativity through rational and logical thinking abilities which consequently regards creativity as intelligence (Torrance, 1979). The Torrance Test of Creative Thinking (Torrance, 1999) is an example of cognitive assessment.

Besides creativity assessment, there is also evidence from the literature to measure innovativeness. The Enterprize™ Questionnaire which was developed based on 26 research-based attributes of an innovative individual (Enterprize™ Questionnaire – Identifying Innovative People, 2010) is an example of assessment on innovativeness. Generally, the items in the questionnaire are divided into five main constructs which are;

- Innovation, creativity, and imagination
- Opportunistic behaviour and initiative within the workplace
- Commitment and the desire to prove one's self
- Risk tolerance and risk management
- Leadership and the ability to inspire others

From this discussion, a number of questions arise that drive this research study, which sought to investigate the perceptions of Malaysian postgraduates as creative and innovative researchers. Additionally, the study also investigated their perceptions of the preparation for creative and innovative research.

Based on these objectives, the study was guided by the following questions.

1. What are the attributes of a creative and innovative researcher as perceived by the respondents in each programme?
2. To what extent do the respondents perceive in each programme that the university has prepared them to be creative and innovative researchers?
3. How confident are the respondents in each programme of becoming creative and innovative researchers?

## **Methodology**

This study sought to investigate the respondents' perceptions of creative and innovative researchers and not to measure their own level of creativity. Hence, the Creative and Innovative Researcher Survey was constructed to measure the knowledge, perceptions and attitudes of a selected group of Malaysian postgraduate students studying in a public university regarding creative and innovative researchers. The items, format and procedure of the instrument were derived and constructed based on the study's research questions and also the literature related to creative and innovative researchers.

The survey consisted of two sections; Section A and B. Section A contained the purpose statement, directions, and was designed to collect demographic information which included gender, ethnicity, and the programme enrolled. As the respondents came from three programmes; M.Ed TESL, M.Ed Educational Management and Leadership, and M.Ed Visual Art Education, Section A enabled the researcher to identify the respondents' perceptions according to their programme. This in turn could help answer the research questions posed earlier. Section B on the other hand, consisted of direction and open-ended items to obtain information regarding the respondent's knowledge, perceptions, and attitudes towards creative and innovative researcher.

Several drafts of the instrument were reviewed by a panel of experts in the field. Revisions were made based on their comments and recommendations. The instrument was also pilot-tested on a small group of target respondents. Once the instrument was validated, it was administered to the respondents. A total of 44 usable questionnaires were returned which constituted an 88% response rate. Using thematic



analysis, the open-ended items were qualitatively analyzed and grouped into emerging categories.

## Findings

The purpose of the study was to identify the perceptions of postgraduate students of creative and innovative researchers of the 21<sup>st</sup> century. The data were organised and analysed around the study's research questions. As the perceptions of the respondents from different programmes were sought, thematic analysis was conducted on the responses given by the respondents according to their programme. Table 1 shows demographic information about the respondents, of whom 11.4% were males and 88.6% females. The majority of the respondents came from the TESL programme (43.2%), followed by Educational Management and Leadership (40.9%) and Art Education (15.9%). This reflects the general population of the faculty's postgraduates of which the TESL programme is the biggest and oldest. Additionally, the Art Education programme is fairly new since it has only been run for two semesters. As a consequence, the distribution of the respondents according to their part of the programme is heaviest in the first part (68.1%), followed by the part 4 students (20.5%). It was discovered that the part 4 and part 5 respondents were TESL postgraduates.

Table 1: Demographic Information about the Respondents

	Items	Frequency (n = 44)	Percentage (%)
Gender	Male	5	11.4
	Female	39	88.6
Programme	TESL	19	43.2
	Educational Management & Leadership	18	40.9
	Art Education	7	15.9
Part	1	30	68.1
	2	3	6.8
	3	1	2.3
	4	9	20.5
	5	1	2.3

*Responses to research question 1: What are the attributes of a creative and innovative researcher as perceived by the respondents in each programme?*

In eliciting the respondents' feedback on the attributes of a creative and innovative researcher, they were first asked to describe what they understood by the terms 'creative' and 'innovative'. A thematic analysis was conducted to identify the emerging themes which were common and similar given by the respondents in their feedback. Tables 2 and 3 in the Appendix provide the relevant details.

The respondents regardless of their programme shared a similar understanding of 'creative' as similar phrases were used. Phrases like 'think out of the box', 'use talent and knowledge to create something new', 'being different', 'look at things differently' and 'use of multiple intelligences' were repeatedly identified from their answers. It could be concluded that the respondents had a similar interpretation of 'creative' and that their interpretation is close to the descriptions of 'creative' given in most literature (see Razik (1966)).

With regards to the respondents' descriptions of 'innovative', it was discovered that they tended to mention 'modify existing product', 'improvise something', 'upgrade', 'become better', 're-create with more function', and 'change for the better'. Warlow (2007) also mentioned similar descriptions of 'innovative'. Additionally, the respondents in each programme also mentioned the relationship between innovative and creativity when they claimed "need to be creative to be innovative" and "comes after creativity" which parallels Tucker (2008 cited in UiTM, 2010, p. 6).

Finally, in providing the attributes of a creative and innovative researcher, the respondents gave the following descriptions. The analysis indicated that most of the attributes given were consistent with their descriptions of 'creative' and 'innovative' which they gave earlier (Refer Table 4 in the Appendix). Additionally, when asked to describe a researcher who is both creative and innovative, the respondents in each programme pointed out the importance of collaboration, sharing of knowledge, networking, publishing and originality. They also added the need for the researcher to provide suggestions and new ideas, seize opportunities, and solve problems besides the need to be adventurous, resourceful, industrious and IT literate. It is interesting to note that the respondents in each programme mentioned common aspects of a creative and innovative researcher as

identified by the Ministry of Higher Education. As described earlier, the Ministry of Higher Education has outlined several strategies which include the need to collaborate, publish, network and commercialize in its attempt to produce creative and innovative researchers (National Higher Education Action Plan 2007-2010).

*Responses to research question 2: To what extent has the university prepared the respondents in each programme to be creative and innovative researchers as perceived by them?*

In eliciting the relevant information to answer research question 2, the respondents were asked to provide their opinions on how the programme, courses and assignments prepared them to be creative and innovative researchers. Their feedback is summarized in the following tables (Tables 5-7) according to the respondents' program.

Table 5 which can be found in the Appendix summarizes the respondents' feedback on how their programme prepared them to be creative and innovative researchers. It was discovered that the respondents in each programme gave positive feedback. In general, they confirmed that the programme had made them more resourceful as they were required to do a lot of reading. They were also required to be independent as they were given the autonomy and responsibility to conduct and organize class activities such as forums, seminars, lead presentations and case studies. In relating to the work assigned, the respondents claimed that they needed to show evidence of critical thinking as they were required to look at things from various perspectives. Originality was also emphasized in the programme as the respondents were required to give their opinions as well as ideas. Most interestingly, some of them stated the relevance of the programme with practical issues since the programme prepared them for the future and the world, not for exams. It is important to note also that one of the respondents mentioned that his programme prepared him to be IT savvy as proposed by Syed Jalaludin (2009, p. 12).

Based on the respondents' feedback about their programme, it is safe to conclude that their respective programmes were claimed to prepare them to become creative and innovative researchers as the programme included activities which required a lot of critical and creative thinking to make them independent and original in their work. This finding is further confirmed by the respondents' feedback on the courses (refer Table 6 in the Appendix) and assignments (refer Table 7 in the Appendix).

The respondents claimed that the courses were practical as they were exposed to the 'how' of things. This is evident when the respondents also stated that they were required to relate what they learnt from one course to another ('go across curriculum' and 'courses are related with each other'). They also admitted that the courses exposed them to new ideas and expanded their existing knowledge through relevant exposure. In relation to this, the respondents claimed that the courses required them to do a lot of reading to be resourceful and reflect on their current profession for self-improvement (Refer Table 6 in the Appendix).

Similarly, the respondents claimed to have a positive attitude towards their programme and courses (Refer Table 7 in the Appendix). In addition, the data supports what the respondents had claimed earlier about the programme and courses. They admitted that reading is a must and they did a lot of it. On top of reading, their assignments also required them to 'go beyond theories' as they needed to synthesize the information gathered and relate it to their experiences and 'real life application'. Finally, the respondents also claimed that they were trained to be independent and resourceful.

*Responses to research question 3: What is the confidence level in becoming creative and innovative researchers of the respondents in each programme?*

To find out the confidence level of the respondents in becoming creative and innovative researchers in each programme, they were asked to determine their confidence level based on a Likert scale (1: very unconfident to 10: very confident). Table 8 depicts their feedback. Likewise, their feedback was presented according to the programme they were in.

From the table, it could be concluded that 50% of the respondents had a medium level of confidence (between 4 and 7 on the scale). This was followed by 29.5% who claimed to have a high level of confidence (between 8 and 10 on the scale). A handful (9%) admitted to having a low level of confidence (between 1 and 3 on the scale). Of the three programmes, respondents who were from Art Education programme seemed to have a high level of confidence as 5 (71.4%) out of 7 claimed to be between 8 and 10 on the scale.

The fact that more than half of the respondents claimed to have a low (9%) and medium (50%) level of confidence indicates that these students require more exposure and training. This is due to the fact that

Table 8: Respondents' Confidence Level

Programme	Low (1 – 3) n	Medium (4 – 7) n	High (8 – 10) n	No Response n
TESL	2	12	2	3
Educational MGMT & Leadership	2	10	6	-
Art Education			5	2
%	9	50	29.5	11.5

most of the respondents (68.1%) were from the first semester of their studies (i.e. part 1). However, this finding also suggests that improvement is needed in the postgraduate programmes either in terms of their courses or assignments. The respondents' suggestions about what could be done to improve the programmes in preparing them to be creative and innovative researchers of the 21<sup>st</sup> century provided the relevant data. Table 9 which could be found in the Appendix summarizes their suggestions.

It was learnt that the respondents wanted to have more hands-on assignments such as seminars and presentations. There is also a suggestion to include demonstrations or model presentations as part of the assignments. This type of assignment could require a high level of creativity and originality (Hardman, 2008). At this juncture, it is worth highlighting that one of the challenges in the 21<sup>st</sup> century is the ability to produce and be original. Hence, the respondents gave relevant suggestions. They suggested the need to collaborate with industries and stakeholders either as part of the course input, content or assignment requirement. This is in line with the need of the 21<sup>st</sup> century postgraduate to participate with relevant parties aside from their lecturers and classmates in their learning process. In relation to the suggestion about collaboration, the respondents also stated that conducting research with industries such as schools both at local and international level could be included as part of the assignments. As noted by the Ministry of Higher Education, participating in research activities with local and international partners is a strategy for producing creative and innovative researchers. Additionally, they also suggested for more exposure to IT and academic reading. This is perhaps due to their need to be proficient in both skills in completing their postgraduate programme. Finally, there is a suggestion to exclude quizzes as part of the assessment, especially those which require heavy memorization of facts.

## **Implications and Recommendations**

The purpose of the study was to investigate the perceptions of postgraduate students about being creative and innovative researchers of the 21<sup>st</sup> century. The data revealed that the respondents' understanding of 'creative' and 'innovative' was consistent with the descriptions given in the literature. Likewise, they were also aware of the attributes of a creative and innovative researcher and the attributes provided by them were similar to that in the literature.

In general, the respondents had a positive attitude towards their programme, courses and assignments in preparing them to be creative and innovative researchers. Nonetheless, when asked about their level of confidence in becoming such, more than half of the respondents admitted to having a medium or low level. This is an indication that they still require relevant exposure and training. After all, most of them (68.1%) were from part 1 of their studies. However, the suggestions they gave are worth considering in attempting to improve the current programmes, courses, assignments and assessment. Their suggestions include revising the curriculum in particular the content, assignments and assessment. Most importantly, they highlighted the need to be included as key players in research activities and the need to participate globally.

The discussion on the recommendations is based on the suggestions by the respondents. First, as they indicate, there is a need for global exposure in the postgraduate programmes. This could be done through students' participating in collaborative research with relevant international partners or industries. Besides research, the respondents also claimed that international exposure could be gained through revising certain contents by including international input. Second, the respondents suggested more hands-on assignments and practical activities such as demonstrations or model presentations. Indirectly, this could train them to be creative and innovative as they are required to come up with an original and new product or idea. Third, as the 21<sup>st</sup> century is synonymous with a borderless world, the respondents suggested that exposure to IT and global network is necessary. In the same vein, they suggested academic reading training be included as they saw the need to be resourceful and exposed to international publications.

## **Conclusion**

This paper has reported a survey of a group of postgraduate students studying in three programmes in a public university in Malaysia. The findings have revealed interesting results such as respondents' awareness of the attributes of creativity and innovation and their perceptions of how their programmes prepare them to be creative and innovative researchers. It is heartening to know that their understanding of the attributes is consistent with that described in the literature. Nonetheless, their varying degree of confidence as creative and innovative researchers and the suggestions they gave to improve the running of their programmes suggest more needs to be done in preparing postgraduates to meet the challenge of being creative and innovative researchers in the 21<sup>st</sup> century. On this note, future research could be conducted to revise postgraduates' curriculum and investigate the challenges faced by postgraduates in fulfilling the requirements of 21<sup>st</sup> century researchers. Other research could investigate if the students' perceptions are an accurate measure of reality, that is how successful the programmes are in producing creative and innovative researchers.

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## Appendix

Table 2: The Definition of ‘Creative’

TESL	Educational MGMT & Leadership	Art Education
<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>Think outside the box</b></li> <li>• Go beyond norm but achievable &amp; rationale</li> <li>• Ability to <b>use talent, knowledge</b> to produce something different</li> <li>• Flexible, <b>think out of the box</b></li> <li>• <b>Think out of the box</b>, able to <b>integrate knowledge</b>, critical thinking</li> <li>• <b>Think out of the box</b></li> <li>• <b>Use knowledge</b> and transform it into new idea</li> </ul> <p><b>PART 4</b></p> <ul style="list-style-type: none"> <li>• <b>Think out of the box</b></li> <li>• <b>Out of the box</b></li> <li>• <b>Be different</b> from others in terms of ideas &amp; producing things what stand out compared to others</li> <li>• <b>Think out of the box; look at things differently</b> or out of the norm</li> </ul> <p><b>PART 5</b></p> <ul style="list-style-type: none"> <li>• Ability to do or <b>come up with something different</b></li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• Not complicated, new &amp; fresh; <b>think out of the box</b></li> <li>• <b>Being different</b> from others &amp; dare to try new things</li> <li>• Able to <b>think out of the box; ideas different from contemporary way</b> of doing things</li> <li>• <b>Think out of the box</b></li> <li>• Ability to <b>create new things with new ideas</b></li> <li>• Have <b>a lot of ideas</b> which can be used to come up with something new</li> <li>• Ability to <b>create something new, different &amp; fresh</b> from existing products</li> </ul> <p><b>PART 2</b></p> <ul style="list-style-type: none"> <li>• Have ideas that can be used to <b>produce something new</b></li> <li>• <b>New ideas</b>, refresh existing things, involve process of generating ideas</li> <li>• Able to <b>create something new</b> out of a given situation</li> </ul> <p><b>PART 3</b></p> <ul style="list-style-type: none"> <li>• Able to come up with different ideas</li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• Ability to <b>do something new; out of the norm, different from others</b></li> <li>• <b>Produce something different</b> &amp; more interesting</li> <li>• Ability to look for alternatives; more than one view; use <b>Multiple Intelligences</b>; able to come up with better solution</li> <li>• <b>Think out of the box; Multiple Intelligences</b></li> </ul>

Table 3: Definition of ‘Innovative’

TESL	Educational MGMT & Leadership	Art Education
<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>Modify existing product</b> to come up with a new one</li> <li>• <b>Modify existing products</b> to make it more appealing</li> <li>• <b>Improvise something</b> in existence to make it better and aligned with the changes like globalisation &amp; modernization</li> </ul> <p><b>PART 4</b></p> <ul style="list-style-type: none"> <li>• <b>Improvise</b> existing theories, ideas to create something more practical &amp; useful in daily lives</li> <li>• <b>Related to creativity</b></li> </ul> <p><b>PART 5</b></p> <ul style="list-style-type: none"> <li>• <b>Modify</b> to be more adaptive to one’s needs</li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• Make changes to <b>upgrade</b> to become more efficient &amp; meet current needs or market demand</li> <li>• Adoption or <b>improvement</b> of existing thing</li> <li>• Ability to change which result in <b>improvement</b></li> <li>• Change to <b>become better</b> to contribute to the society</li> <li>• Futuristic</li> </ul> <p><b>PART 2</b></p> <ul style="list-style-type: none"> <li>• <b>Need to be creative to be innovative</b></li> <li>• <b>Comes after creativity</b></li> </ul> <p><b>PART 3</b></p> <ul style="list-style-type: none"> <li>• Ability to create newness, <b>be creative</b></li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>Re-create</b> with more function, sense of humanity, in touch with environment &amp; useful</li> <li>• New methods/tech for <b>better condition; upgrade;</b> parallel with globalization</li> <li>• <b>Change existing things</b> to become more advance &amp; useful</li> <li>• <b>Needs creativity</b></li> <li>• <b>Change for the better</b></li> </ul>

Table 4: Attributes of a Creative and Innovative Researcher

TESL	Educational MGMT & Leadership	Art Education
<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• Can <b>collaborate</b> to get new insights</li> <li>• Hardworking, accept challenges, <b>tries to improve</b></li> <li>• Persistent; always hungry to <b>produce something new</b>;</li> <li>• Hardworking, <b>critical thinker</b>, determined</li> <li>• Able to <b>provide new insights</b>, new info for knowledge sharing</li> <li>• Determined, goal-oriented</li> <li>• <b>knowledgeable</b>, quick thinking, <b>look at things differently</b></li> <li>• <b>analytical &amp; critical</b>, ready to accept &amp; argue</li> </ul> <p><b>PART 4</b></p> <ul style="list-style-type: none"> <li>• able to <b>explore</b>; produce articles for <b>knowledge sharing</b></li> <li>• <b>think out of the box</b>; open to criticism; willing to explore</li> <li>• <b>grab opportunities</b>; patient; forward-looking; <b>fresh ideas</b>; <b>look at things from different perspectives</b></li> <li>• <b>share knowledge &amp; contribute new ideas/suggestions</b></li> </ul> <p><b>PART 5</b></p> <ul style="list-style-type: none"> <li>• Patient, persevere</li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>Up-to-date with the latest info or knowledge</b>; alert; explore; play games; travel</li> <li>• Committed; able to <b>suggest new ideas</b></li> <li>• <b>Resourceful</b>, hardworking, wider view &amp; perspective, <b>think out of the box</b>, <b>critical thinker</b></li> <li>• Like to think; <b>creative thinking; instinct to develop &amp; discover new knowledge</b>;</li> <li>love reading; like to try</li> <li>• Determined, imaginative, focus-oriented; open, <b>think out of the box</b>; <b>willing to try something new</b></li> <li>• <b>Critical thinker, original</b>, passion</li> <li>• Aware of current issues, manipulate issues, research the issues &amp; <b>publish the new knowledge</b> for future researchers</li> </ul> <p><b>PART 2</b></p> <ul style="list-style-type: none"> <li>• Always looking for new findings; up-to-date; <b>critical thinker</b></li> <li>• <b>Original; IT literate, critical thinker</b></li> <li>• Diligent; <b>industrious</b>; responsible; committed</li> </ul> <p><b>PART 3</b></p> <ul style="list-style-type: none"> <li>• Has lots of interesting <b>ideas</b></li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>Open minded; think of the country's future &amp; development</b></li> <li>• <b>Find opportunities</b></li> <li>• <b>Resourceful</b></li> <li>• Open minded, <b>resourceful</b></li> <li>• <b>Original; problem solver</b>; ready</li> <li>• Sharp thinkers, outspoken; <b>IT savvy</b>, humble; <b>social network</b>; religious</li> <li>• Smart &amp; quick; <b>problem solver</b>; beyond expectation; <b>curious</b></li> </ul>

Table 5: Respondents' Opinions on the Programme

TESL	Educational MGMT & Leadership	Art Education
<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• Make me <b>read a lot</b>; enrich vocabulary</li> <li>• <b>Work independently</b>, feedback from everyone; sharing of knowledge</li> <li>• Expand our knowledge &amp; make us <b>look at things from different perspectives; persuade us to become critical thinkers</b></li> <li>• We are given the <b>autonomy &amp; responsibility</b>; exposed us to relevant academic activities (seminars, conferences &amp; other outside classroom activities)</li> <li>• Allow us to <b>look at things from various perspectives &amp; encourage us to be critical</b></li> <li>• Makes me <b>think forward</b>, how I could improve the education system, I became a very <b>critical thinker</b> as I acquire different views</li> <li>• <b>A lot of thinking</b>, creative knowledge &amp; <b>lots of reading</b></li> </ul> <p><b>PART 4</b></p> <ul style="list-style-type: none"> <li>• Topics are <b>current</b></li> <li>• <b>Various courses expose me to new areas</b></li> <li>• Makes us <b>create products as part of the assignments</b> (e.g: Syllabus Design)</li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• The work required <b>need a lot of critical &amp; creative thinking</b> (e.g workshop, presentation)</li> <li>• Be <b>independent</b></li> <li>• <b>Extensive reading</b></li> <li>• <b>Exposure</b> to various fields</li> <li>• <b>Made us think what next</b></li> <li>• Various courses provided are <b>relevant for the exposure needed</b></li> </ul> <p><b>PART 2</b></p> <ul style="list-style-type: none"> <li>• Motivate students to <b>contribute ideas</b></li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• Programme <b>prepares me for the future and not meant for exams</b></li> <li>• Made me <b>aware of the importance of my work &amp; research to the country</b></li> <li>• This programme itself is creative and innovative; <b>teach students to overcome challenges &amp; obstacles</b></li> <li>• Open my mind to the <b>world of art locally and internationally</b></li> <li>• <b>Prepared us to be IT savvy</b></li> </ul>

Table 6: Respondents' Opinions on the Courses

TESL	Educational MGMT & Leadership	Art Education
<p><b>PART 1</b></p> <ul style="list-style-type: none"><li>• Provided info on the 'hows' (e.g produce proposal, forum, seminar)</li><li>• Requirement to be <b>resourceful</b></li><li>• Ability to go <b>across curriculum</b></li></ul> <p><b>PART 4</b></p> <ul style="list-style-type: none"><li>• Make me <b>reflect on my work as an educator &amp; find ways to improve myself</b></li></ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"><li>• Give <b>new ideas, knowledge</b></li><li>• <b>Expand current knowledge</b></li></ul> <p><b>PART 2</b></p> <ul style="list-style-type: none"><li>• <b>group work</b> can help to become creative &amp; innovative</li><li>• <b>Courses are related with each other</b></li></ul> <p><b>PART 3</b></p> <ul style="list-style-type: none"><li>• <b>Case study</b> for almost every subject</li></ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"><li>• Help <b>improve reading skills &amp; awareness of current issues</b></li><li>• <b>Exposure to latest hi-tech gadgets</b></li><li>• <b>Work independently</b></li><li>• <b>Exposure from world</b></li></ul>

Table 7: Respondents' Opinions on the Assignments

TESL	Educational MGMT & Leadership	Art Education
<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>forum, seminar, lead discussion</b></li> <li>• <b>presentations, conduct interviews, case studies</b></li> <li>• <b>made me become more investigative</b></li> <li>• <b>pushed to go beyond theories; relate to real world application</b></li> <li>• <b>need to seek for in-depth info</b></li> <li>• <b>forum &amp; lead discussions encouraged us to become self-directed</b></li> </ul> <p><b>PART 4</b></p> <ul style="list-style-type: none"> <li>• <b>Encourage me to think and synthesize relevant works</b></li> <li>• <b>Lots of reading</b> needed to complete an assignment; need to give our <b>critical review</b></li> <li>• <b>Observations, interviews, case study</b></li> </ul> <p><b>PART 5</b></p> <ul style="list-style-type: none"> <li>• Gave us <b>ample practice to conduct research</b></li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>Need to read a lot;</b> learnt new insights</li> <li>• <b>Find own resources</b></li> <li>• <b>Be independent</b></li> <li>• <b>Be self-directed</b> &amp; go beyond expectation</li> <li>• <b>Seminar, case study, article review</b></li> <li>• <b>Need to relate with current situation</b></li> </ul> <p><b>PART 2</b></p> <ul style="list-style-type: none"> <li>• <b>Integrate prior knowledge and new skills</b></li> </ul> <p><b>PART 3</b></p> <ul style="list-style-type: none"> <li>• <b>Reading different types of material</b></li> </ul>	<p><b>PART 1</b></p> <ul style="list-style-type: none"> <li>• <b>Lots of reading</b> before able to write</li> <li>• <b>Need to relate to our experiences</b></li> </ul>



Table 9: Suggestions to Improve the Programme

TESL	Educational MGMT & Leadership	Art Education
<ul style="list-style-type: none"><li>• Hold more seminars or research presentations</li><li>• Involve relevant stakeholders to provide input</li><li>• No quizzes especially on memorization</li><li>• Conduct collaborative research with the schools</li></ul>	<ul style="list-style-type: none"><li>• Besides written assignments, there should be hands-on assignments such as demo/model</li><li>• Include relevant industries</li><li>• Compare local and international contexts</li><li>• Involve in lecturers' research</li></ul>	<ul style="list-style-type: none"><li>• More IT related exposure</li><li>• Need training on academic reading</li><li>• More global/international exposure</li></ul>

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