REPORT OF THE
YAYASAN MENDAKI
FUTURE-READY
CONVERSATION SERIES

Yayasan
MENDAKI

ABSTRACT

Yayasan MENDAKI embarked on a series of engagements between January and July 2016 with secondary and tertiary students in order to gauge Malay/Muslim youths' future-readiness – in particular, their awareness of, and receptiveness to, SkillsFuture and lifelong learning. Besides gathering Malay/Muslim youth sentiments on education and skills-related issues, the conversations also attempted to get a sense of the youths' perception of the future in the broader context – such as their general concerns and aspirations. In a nutshell, the entire ground sensing exercise revealed that many of the Malay/Muslim secondary and ITE student respondents were unaware of SkillsFuture, compared to their JC and polytechnic counterparts. Most of the respondents – across secondary and tertiary levels – were also less likely to approach ECG counsellors in school. Furthermore, while the students generally had positive academic and career aspirations, they were often unsure of the steps to be taken to achieve them, as recounted during the focus group discussions.

INTRODUCTION

The phenomenon of digital disruption is a leitmotif in today's discourse about the future of education and work. Harvard Business School academic Clayton Christensen defines disruption as a force displacing "an existing market, industry or technology" and producing "something new and more efficient and worthwhile" (quoted in Howard, 2013). The rise of robots and artificial intelligence, culminating in their integration into cyber-physical systems[1], has played a crucial role in the present technological revolution. As a result, some types of human labour have been rendered "unnecessary or economically uncompetitive", creating "demand for new skills" (Manyika et al, 2013). Indeed, in their seminal paper, Oxford researchers Carl Benedikt Frey and Michael Osborne (2013) posit that computerisation – the use of "computer-controlled equipment" with "sophisticated algorithms" to do tasks in "routine intensive occupations" – is a main driver of high unemployment in the West. They estimate that about 47% of jobs in the United States are at risk of being automated.

It is of no surprise therefore that the advent of emerging technologies, together with the attendant impact on the employment and education landscapes, have become a cause for concern for governments and societies worldwide. Already, private car hire services Uber and Grab – which tap user data to match supply and demand – are adversely affecting taxi businesses and drivers in many countries. Similarly, traditional manufacturing industries will have to increasingly contend with new, disruptive technologies such as "3D printing[2], the Internet of Things and data analytics" (Lim, 2016) which will drastically transform the nature of production. Even white-collar employment is not safe from disruption (Pew Research Center, 2014): the financial industry now has to deal with 'roboadvice' – "algorithms that can recommend saving and investment products" (Williams-Grut, 2016), threatening to replace the human financial advisor.

[1]*The US National Institute of Standards and Technology (2017) defines cyber-physical systems as "smart systems (that) are co-engineered interacting networks of physical and computational components. These systems...form the basis of emerging and future smart services, and improve our quality of life in many areas."*

[2]*McKinsey Global Institute (2013) defines 3D printing as "additive manufacturing techniques to create objects by printing layers of material based on digital models."*
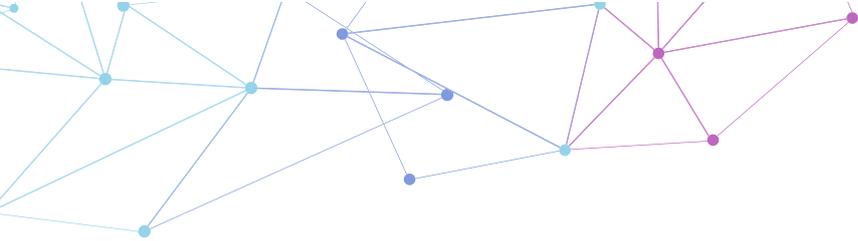
Disruption has been a key theme in Singapore government pronouncements about challenges inherent in the future economy. In his 2016 National Day Rally speech, Prime Minister Lee Hsien Loong cited the taxi and retail businesses as examples of industries being affected by e-commerce, but expressed optimism that disruption can present opportunities if Singaporeans are willing to equip themselves with "relevant skills which are in demand" (Prime Minister's Office, 2016). Deputy Prime Minister Tharman Shanmugaratnam posited that against the rapidly-changing economic terrain where new, low-cost technologies are being introduced at an unprecedented rate, there is a need to recognise that the kind of skills one prepares for at an early age "doesn't stay relevant very long", necessitating "short-cycle learning that responds to the market" (Prime Minister's Office, 2016). For students, this new reality demands a mindset shift, one which recognises the imperative to learn and reskill beyond one's own area of specialisation over the lifetime. For education authorities, there is the urgent requirement of preparing our children for the digital workforce, and equipping them with technical skills in STEM (science, technology, engineering and mathematics), including coding, statistics and software use, so that they can be a value-added complement to machines. However, beyond making sure our students are technologically literate, skills that would give them an edge over machines – like creativity, collaboration and entrepreneurship – are just as important, if not more so. This is because "no one knows which jobs will be automated later" and having both sets of skills would enable students to "learn flexibility" and survive in the future landscape, whatever it brings (Miller, 2017).

The Singapore government recognises the importance of getting our students to be future-ready, and has been undertaking initiatives to expose them to both technological and 'soft' skills in the education system. A group of primary schools have begun to offer robotics classes and Co-Curricular Activities (CCAs) (Channel NewsAsia, 23 February 2016), while the Ministry of Education (MOE) has just introduced programming classes in 19 secondary schools as part of a new O-Level subject, computing (Straits Times, 29 February 2016). In fact, some parents, especially those among the middle class, have been sending their children as young as preschool age to expensive coding classes worth hundreds of dollars (TODAY, 21 June 2016). Where character development is concerned, schools are guided by MOE's 21st Century Competencies framework in which skills such as "Critical and Inventive Thinking", "Communication" and "Cross-cultural" awareness are emphasised, to ensure holistic education (Ministry of Education, 2015). However, enterprise thinking is missing from MOE's framework, when it is precisely most sought-after in the future digital economy which favours "job creators" over "job seekers" (Owen, 2016). Broadly, as part of the national SkillsFuture initiative, students across all levels can expect to have access to enhanced education and career guidance (ECG), as well as more structured internships for tertiary students (SkillsFuture, 2017).

Malay/Muslims, like the rest of Singaporeans, have been urged to equip themselves with the skills and knowledge necessary to face the volatile, uncertain, complex and ambiguous (VUCA) future economy. Calling SkillsFuture a "game changer" (Channel NewsAsia, 17 August 2015) for the community, Minister-in-charge of Muslim Affairs Dr Yaacob Ibrahim exhorted Malay/Muslims to take advantage of the scheme in order to remain relevant in the workforce. Indeed, such calls carry additional significance for the community: while Malay/Muslims have made tremendous socioeconomic progress in absolute terms, official figures show that they still trail their Chinese and

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[3]*According to the International Telecommunication Union's Internet of Things (IoT) Global Standards Initiative (2016), IoT refers to "a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies."*

Indian counterparts in performance at national examinations (Ministry of Education, 2014), whereas Malay/Muslim workers continue to be overrepresented among unskilled and semi-skilled occupational niches (Department of Statistics, 2011). The skills deficit in the community needs to be tackled as the "benefits of technologies (contributing to disruption) may not be evenly distributed", resulting in "widening income inequality" (Manyika et al, 2013).

To complement national efforts, Dr Yaacob announced in 2015 that Malay/Muslim self-help group Yayasan MENDAKI would establish a Future Ready Unit to promote SkillsFuture to the community. The unit has been organising seminars, workshops and outreach to get Malay/Muslim students onto the future-ready train. Some of their initiatives include the NextStop Seminar, the Future First Programme and the Future-of Series. MENDAKI, along with the other self-help groups, have also been collaborating with Google to expose children from low-income homes to programming, through a scheme called 'Code in the Community' (Straits Times, 10 November 2016). In addition, as part of the new department's plans to "better understand the hopes and aspirations of our community" (Ministry of Culture, Community and Youth, 2016), MENDAKI embarked on a series of engagements between January and July 2016 with secondary and tertiary students in order to gauge Malay/Muslim youths' future-readiness – in particular, their awareness of, and receptiveness to, SkillsFuture and lifelong learning. Besides gathering Malay/Muslim youth sentiments on education and skills-related issues, the conversations also attempted to get a sense of the youths' perception of the future in the broader context – such as their general concerns and aspirations. This paper is a summary of the findings from the surveys and focus group discussions conducted. The data collected are crucial as they can be used to inform the future development of "more targeted and effective support" (Ministry of Culture, Community and Youth, 2016) for our youths and families.
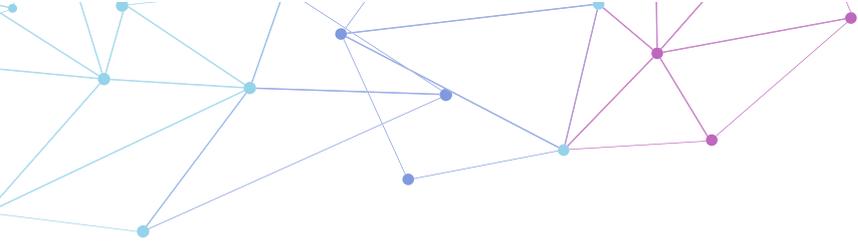
METHODS

This project was conceptualised as a ground sensing, exploratory study to ascertain Malay/Muslim youths' future-readiness with regards to the changing employment and education landscapes. In all, using purposive sampling, 215 youths were approached to participate in the MENDAKI Future Ready Conversations. Secondary students were represented by respondents from the MENDAKI Tuition Scheme (MTS) and Madrasah Aljunied (MA), as well as those who attended MENDAKI events such as 'Brunch with MENDAKI' and 'E.L.L.Y@SENSE'. Students from Institute of Technical Education (ITE) College Central, Pioneer Junior College (PJC), Tampines Junior College (TPJC) and Republic Polytechnic (RP) made up tertiary level representation in the study. All respondents' "fully informed consent" (Lincoln and Guba, 2001) were sought and they were reminded that should they feel uncomfortable at any point of the process, they could request to withdraw immediately.

Surveys were administered to obtain quantitative data about the youths' awareness of SkillsFuture and ECG initiatives. Following surveys, focus group discussions of about 35 minutes per session were conducted with each student group to obtain qualitative data about the youths' personal aspirations, as well as their perception of future opportunities and challenges, as well as receptiveness to lifelong learning. Such a research focus on social process and social meaning requires "depth and roundness of understanding" in the respondents' "contextual accounts" (Mason, 2002). Hence, the interview questions were semi-structured and the interview schedule merely served as a guide with much room left for free expression of views related to the topic, in order to elicit responses high in richness and complexity. At the end of each focus group session, the research assistants would collate the responses in verbatim and identify emerging themes from the conversations based on the frequency of certain keywords used. Together, the quantitative data yielded from the surveys and the rich, in-depth qualitative data from the group conversations contributed to a holistic view of the participants' thoughts on the education and career outlook.

As with any research endeavour, this project had its own limitations. First, the relatively limited number of participants meant that the findings should not be taken as generalisable to all Malay/Muslim students. Second, the disproportionate number of female respondents raised the possibility of gender-biased narratives, although the research team had no control over the former – the selection of participants was left to the respective institutions. Third, while utmost care was taken to ensure that the transcripts from the focus group discussions match closely with what was spoken in verbatim, certain portions of the audiotape were unclear or inaudible. Notwithstanding all these, the data collected represents a viable starting point in understanding our youths' perception of the future.

RESULTS

In a nutshell, the entire ground sensing exercise revealed that many of the Malay/Muslim secondary and ITE student respondents were initially unaware of SkillsFuture, compared to their JC and polytechnic counterparts. Most of the respondents – across secondary and tertiary levels – were also less likely to approach ECG counsellors in school. Furthermore, while the students generally had positive academic and career aspirations, they were often unsure of the steps to be taken to achieve them, as recounted during the focus group discussions.

SURVEY FINDINGS[4]

Malay/Muslim JC students charted the highest level of SkillsFuture awareness, with as many as 78% of the respondents having heard of SkillsFuture. In contrast, the ITE and secondary groups had levels of awareness below 30%. Among those who have heard of SkillsFuture in the JC and ITE groups, a majority of them (71%) thought of SkillsFuture as relevant to their personal development, while the secondary groups mostly thought otherwise. The high level of awareness and positive perception among JC respondents about SkillsFuture could be due to their participation in General Paper (GP) classes where current affairs were most frequently discussed.

Where seeking help from ECG counsellors is concerned, a slight majority among the secondary groups indicated that they would not approach such counsellors in school for advice. 67% of the respondents from 'Brunch with MENDAKI' said 'No' to approaching these counsellors; the figure was 56% for 'E.L.L.Y@SENSE' participants. This reticence could be attributed to a stigma attached to the term 'counsellor', which might connote a formal or authoritative relationship to students. Meanwhile, MOE announced that it would deploy a total of 100 ECG counsellors to secondary schools, JCs, Millennia Institute, polytechnics and ITE by 2017 (Channel NewsAsia, 30 October 2015). In addition, all polytechnics and ITE Colleges have set up their own ECG Centre in January 2016, with each centre housing six counsellors.

However, our JC and ITE respondents showed little interest in approaching ECG counsellors – almost none had done so. While a majority of the JC respondents (about 85%) were aware of the presence of ECG counsellors in their schools, more than half of the ITE respondents (58%) were not aware of the existence of ECG counsellors on their campus. Perhaps, more could be done by ITE to publicise their career guidance office and services. For JC students, the low user rate of ECG services could stem from their immediate academic priority of passing the GCE 'A' Levels for university admission; hence the lack of urgency placed on utilising ECG services in charting their career paths further down the road.

For three different groups of students – from ITE, Madrasah Aljunied, and Secondary level MTS students – an additional targeted question was posed to them to sense their receptiveness and sense of need for Educational and Career Guidance services in their institutions. The charts below illustrate the findings:

(1) ITE students were asked: **"Are you aware of the following programmes and services offered by your school?"**, as a general stock-take of the current response and awareness of the ITE students to the ongoing efforts in their schools. Referring to Chart 1, most of the students are expectedly aware of the enhanced internships, however more could be done to enhance the awarenss of ITE students on the available SkillsFuture Earn and Learn Programme for them.
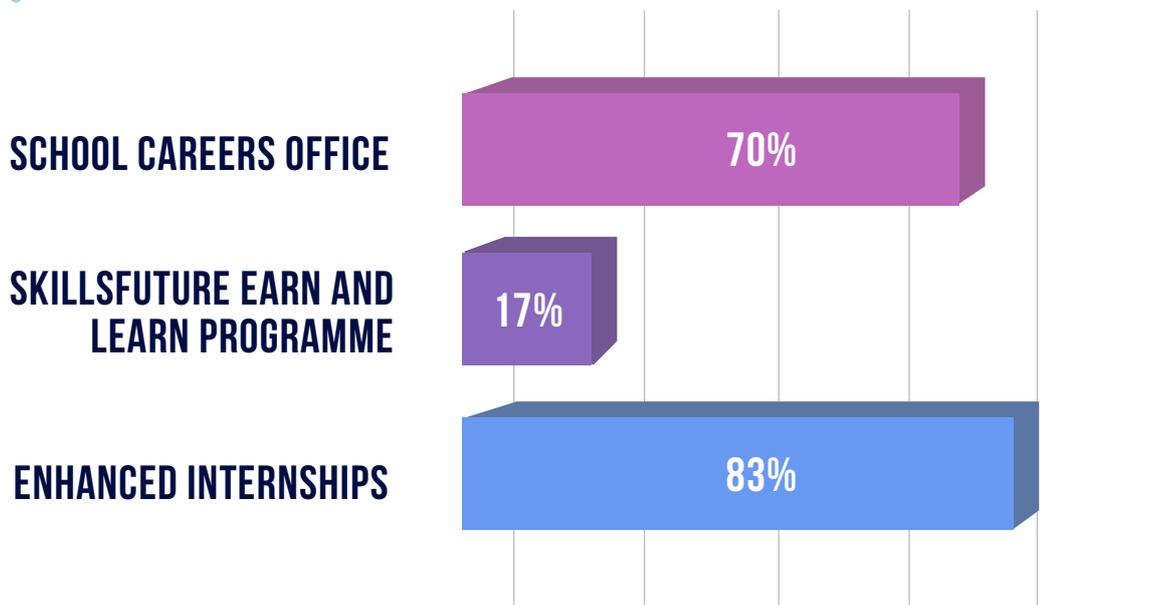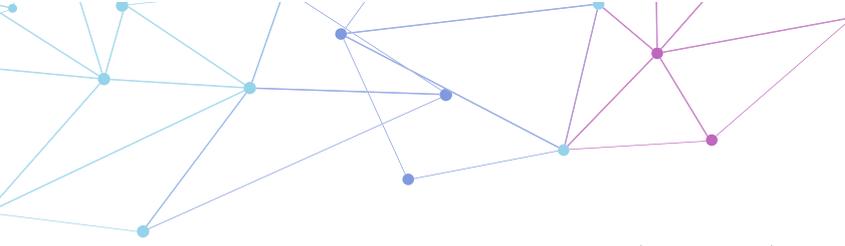
CHART 1: AWARENESS OF MALAY/MUSLIM ITE STUDENTS OF EXISTING ITE SERVICES AND PROGRAMMES

- SCHOOL CAREERS OFFICE — 70%
- SKILLSFUTURE EARN AND LEARN PROGRAMME — 17%
- ENHANCED INTERNSHIPS — 83%

(2) As the religious education institutions like Madrasah Aljunied are private, the national ECG initiatives like ECG counsellors are not available within their school. Hence, secondary level students from Madrasah Aljunied were posed the question "Do you think having ECG counsellors in your school would be beneficial?" This would prompt a look into the perception of the students on the relevance and usefulness of ECG counselling for all secondary level students; and all participants unanimously agreed that presence of ECG counsellors would be beneficial (see Chart 2).
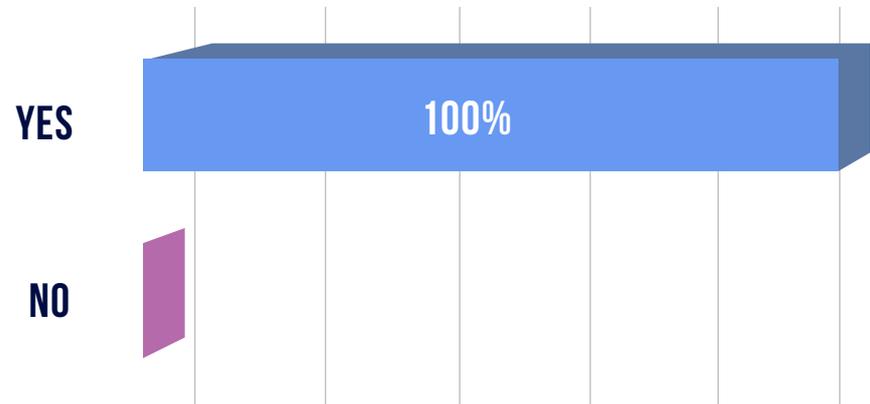

CHART 2: PERCEPTION OF MADRASAH STUDENTS ON USEFULNESS OF HAVING ECG COUNSELLORS IN SCHOOL

- YES — 100%
- NO

(3) Lastly, we asked the secondary school students from MTS the question "Would you approach an ECG counsellor in your school for advice?" These students come from differing schools, and the common domain between them at the point of the survey administration was that they are all in the MTS system. Hence, the question serves to tease out the receptiveness of Malay/Muslim secondary students generally towards the ECG counsellors at their schools. As illustrated in the chart below, majority of them feel reassured and comfortable to approach their counsellors by themselves.
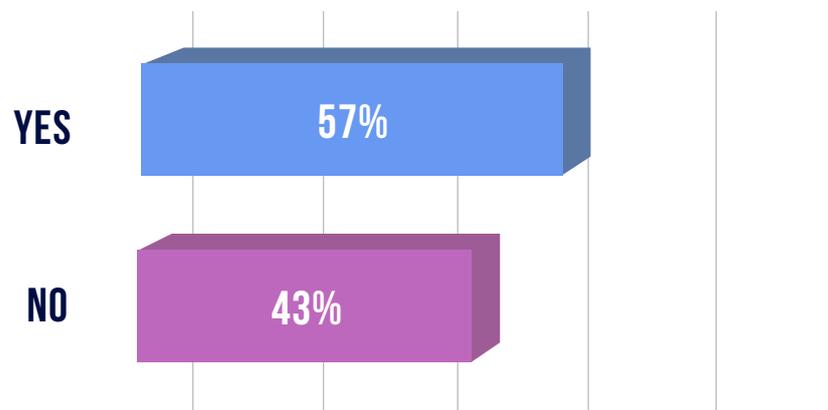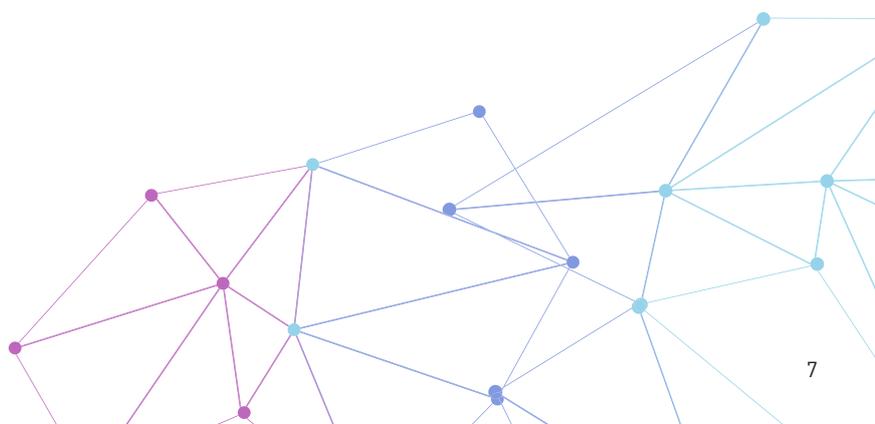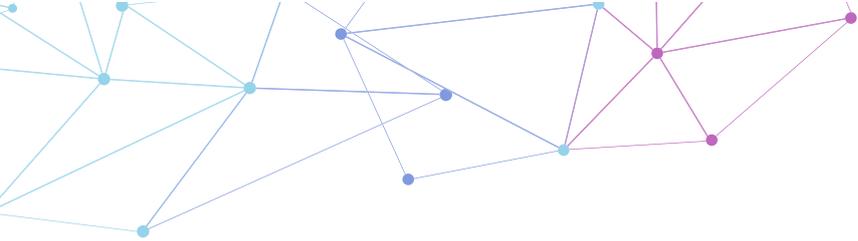
YES 57%

NO 43%

FOCUS GROUP DISCUSSION: EMERGING THEMES

Findings from the focus group discussions with Malay/Muslim secondary, ITE, JC and polytechnic student respondents were grouped into eight categories: (i) General Future Projections, (ii) Personal Concerns, (iii) Personal Hopes & Aspirations, (iv) Personal Sources of Support, (v) Societal Challenges, (vi) Societal Opportunities, (vii) Skills for the Future, and (viii) Gaps to be Addressed. For each category, the research assistants would record a transcript of the conversations and identify emerging themes (in italics), which are illustrated below.
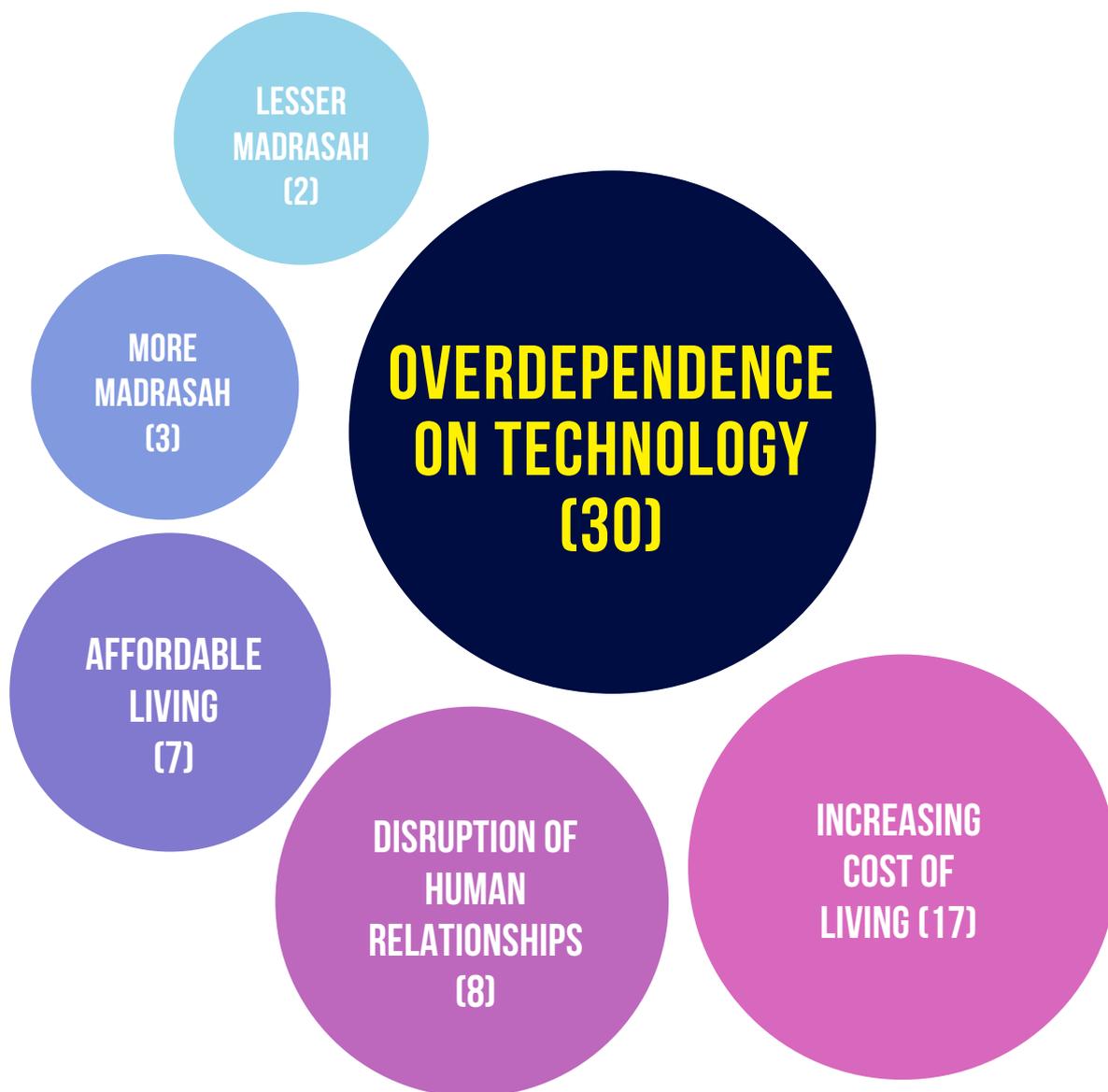
A scan of the sub-themes within all the eight overarching categories abovementioned, the top three sub-themes that were revealed from the discussions are:
- Support to Achieve Aspirations: Parents and family (30)
- Concerns: Increasing competition in workforce (influx of foreigners) (23)
- Hopes & Aspirations: Overseas opportunities (22)

1. FUTURE PROJECTIONS

LESSER MADRASAH (2)

MORE MADRASAH (3)

AFFORDABLE LIVING (7)

OVERDEPENDENCE ON TECHNOLOGY (30)

DISRUPTION OF HUMAN RELATIONSHIPS (8)

INCREASING COST OF LIVING (17)

INCREASING COST OF LIVING
"It is too expensive to pay for COE, Road Tax, Parking Fee"
"Cost of living too high"

OVERDEPENDENCE ON TECHNOLOGY
"People becoming more pampered due to overdependence on technology"

2. CONCERNS

INCREASING COMPETITION IN WORKFORCE (INFLUX OF FOREIGN TALENT) (51)

INCREASING COMPETITION IN WORKFORCE (GLUT OF DEGREE HOLDERS) (27)

MINOR SUB-THEMES ALSO MENTIONED:

- *Overcrowding/overpopulation (Madrasah, JC)*
- *Discrimination in Education (Madrasah; JC in terms of university admissions)*
- *Lesser proportion of Singaporeans (Secondary and JC level)*
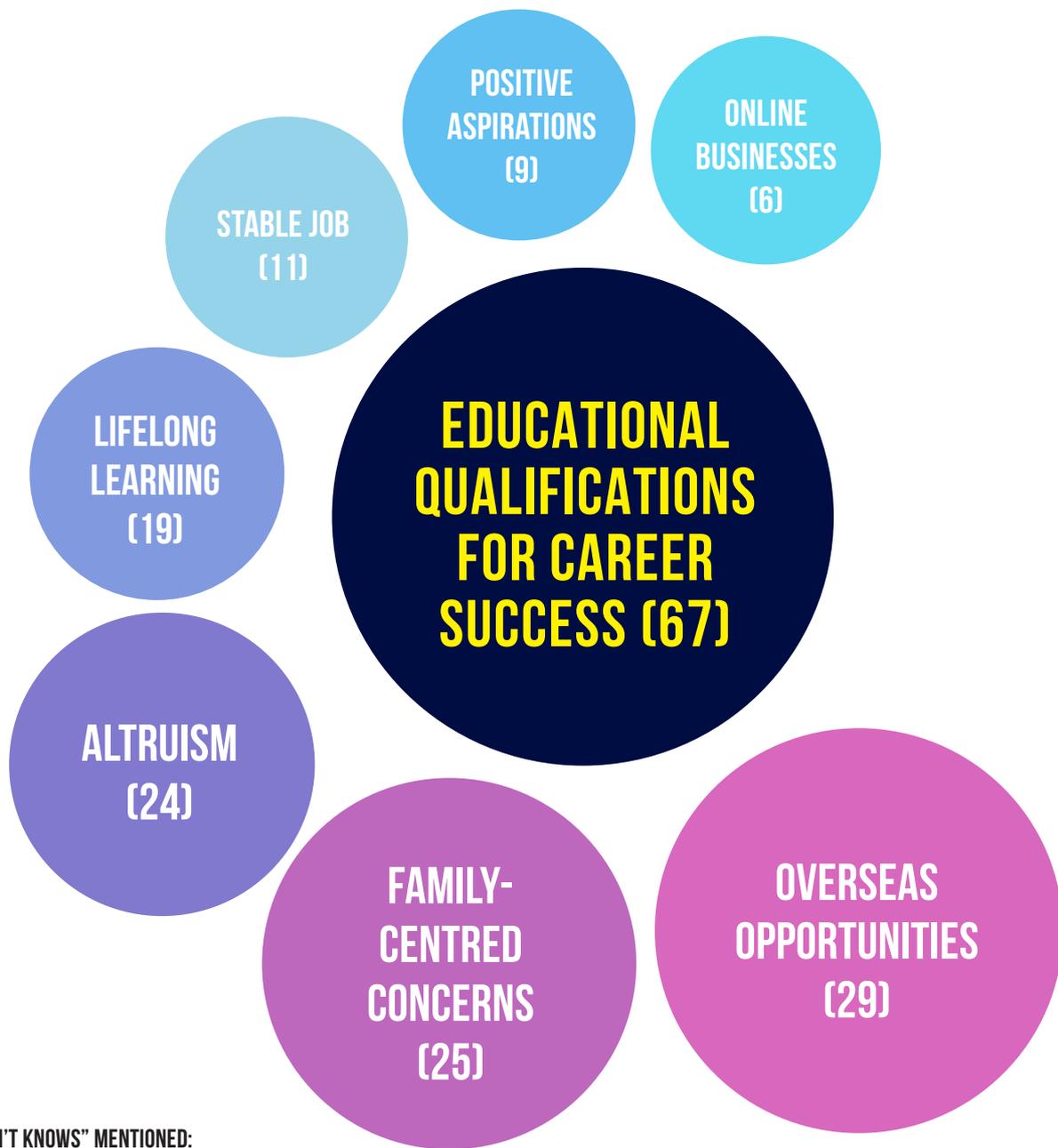- *Retrospective outlook on self as challenge (ITE)*

INCREASING COMPETITION IN WORKFORCE (GLUT OF DEGREE HOLDERS)
"No jobs for us in the future: we may have a high education level, but no job offer"

INCREASING COMPETITION IN WORKFORCE (INFLUX OF FOREIGN TALENT)
"Increased competitiveness in the workforce with fluctuating number of foreigners"
"Overrepresented in low paying/non-professional jobs due to our lack of qualifications, and discrimination

3. HOPES & ASPIRATIONS

POSITIVE ASPIRATIONS (9)

ONLINE BUSINESSES (6)

STABLE JOB (11)

LIFELONG LEARNING (19)

EDUCATIONAL QUALIFICATIONS FOR CAREER SUCCESS (67)

ALTRUISM (24)

FAMILY-CENTRED CONCERNS (25)

OVERSEAS OPPORTUNITIES (29)

"DON'T KNOWS" MENTIONED:
- *Madrasah Aljunied: 3*
- *ITE:0* (Extracted from scribe notes: "All students know what they want to do after finishing ITE").
- *MTS: 5*
- *PJC: 1* (Extracted from scribe notes: but noteworthy that "5 students who had their goals in mind, are afraid to get rejected or to be informed that their goals might be too ambitious")
- *TPJC: 2*

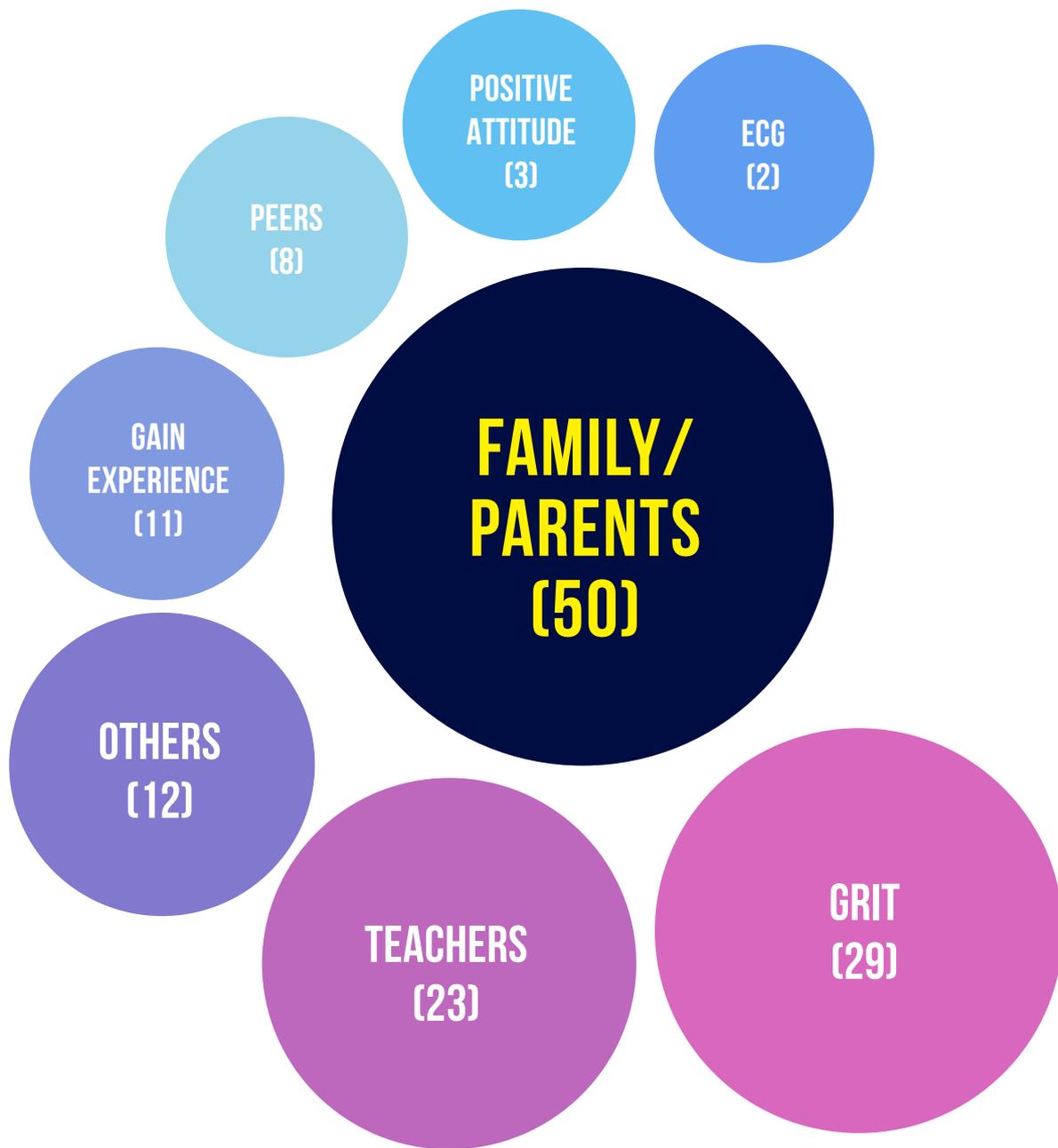By age-group, there are differences (mentions by levels specifically)

OVERSEAS OPPORTUNITIES
"Working overseas…is good for career exposure"
"Would like to work at an overseas design and architecture company"

ALTRUISM
"Staying rooted and giving back to the community"
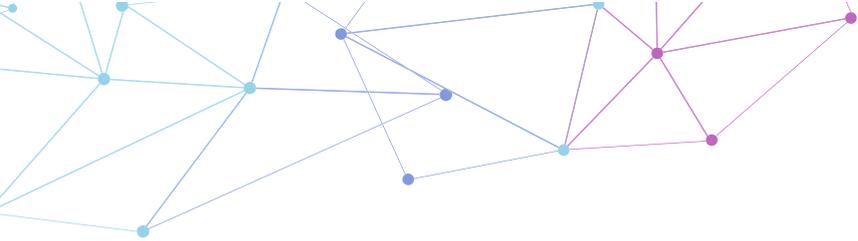
4. SUPPORT TO ACHIEVE ASPIRATIONS

POSITIVE ATTITUDE (3)

ECG (2)

PEERS (8)

GAIN EXPERIENCE (11)

FAMILY/ PARENTS (50)

OTHERS (12)

TEACHERS (23)

GRIT (29)

PARENTS AND FAMILY
"My family really motivates me a lot"
"My aunt is my inspiration… talk to my parents and sisters for advice"

TEACHERS
"My teacher told me that if I want to become a preschool teacher, I'll need to be good in English, Math, and Science. Science is my weakest subject so I'll study hard on that subject"

5. CHALLENGES

CYBER CRIMES (2)

DISCRIMINATION IN WORKFORCE (32)

DISCRIMINATION IN EDUCATION (4)

UNIVERSITY ADMISSION (10)

TECHNOLOGY BREEDS COMPETITION (10)

DISCRIMINATION IN WORKFORCE
*"I've heard of Malays experiencing discrimination...
think we are 'lazy'"*
*"I also want to benefit from the opportunities out there...
they do not allow Muslimah to wear the tudung"*

TECHNOLOGY BREEDS COMPETITION
*"Competition for the non-tech or less-tech reliant jobs will be
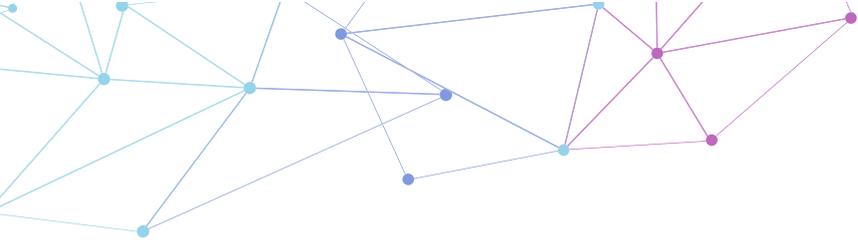fiercer"*

6. OPPORTUNITIES

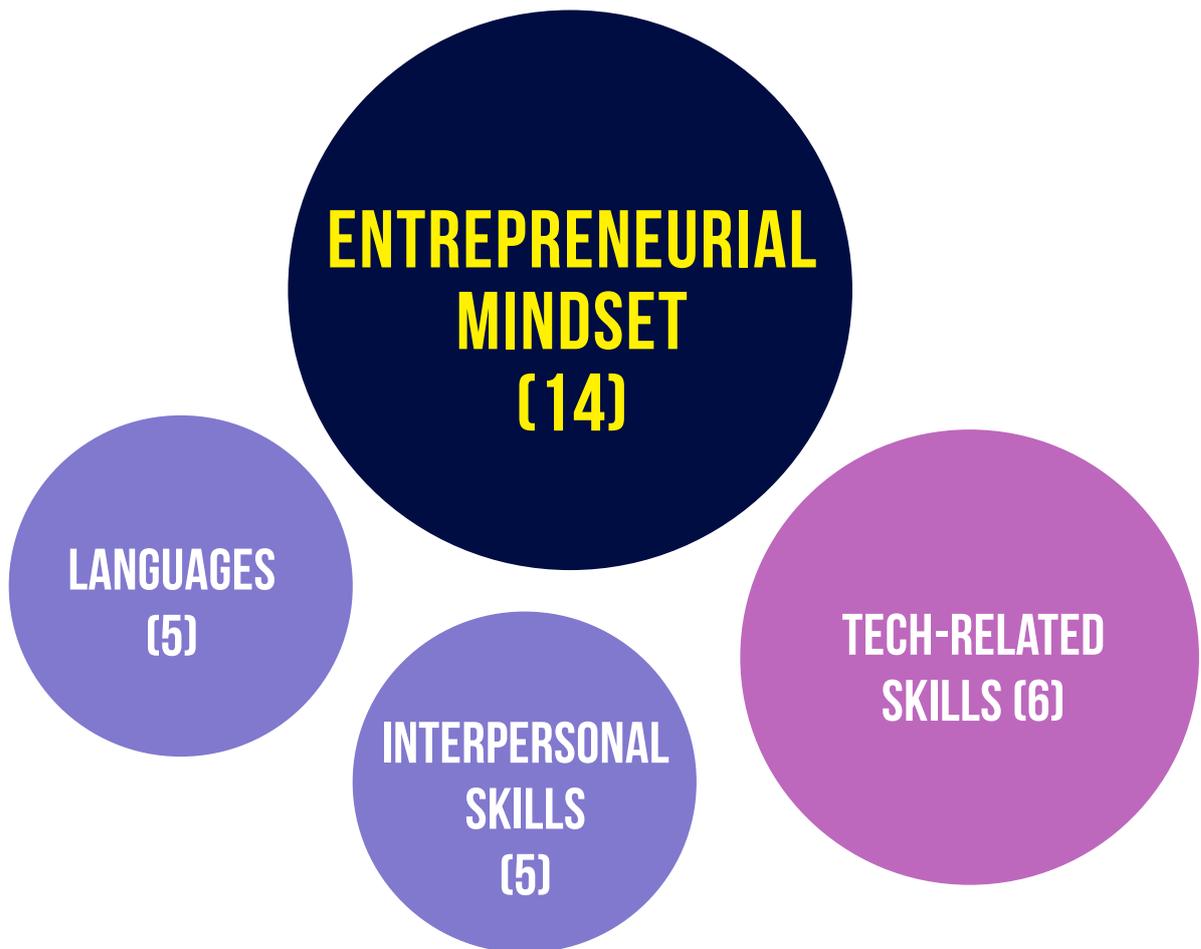**TECHNOLOGY BREEDS CREATIVE ENVIRONMENT (14)**

INTERCONNECTEDNESS (6)

TECHNOLOGY BREEDS CREATIVE ENVIRONMENT
"More creativity subjects, creating opportunities for people who are interested in arts"
"Online businesses would be the norm"

7. LIFELONG LEARNING-SKILLS FOR FUTURE

ENTREPRENEURIAL MINDSET (14)

LANGUAGES (5)

INTERPERSONAL SKILLS (5)

TECH-RELATED SKILLS (6)

INTERPERSONAL SKILLS
"Increase community and social awareness"
"Sharpen communication skills"

8. GAPS-GOVERNMENT, YM

MORE ASSISTANCE SCHEMES (21)

MENTORING PROGRAMMES (8)

MORE INTERNSHIP OPPORTUNITIES (10)
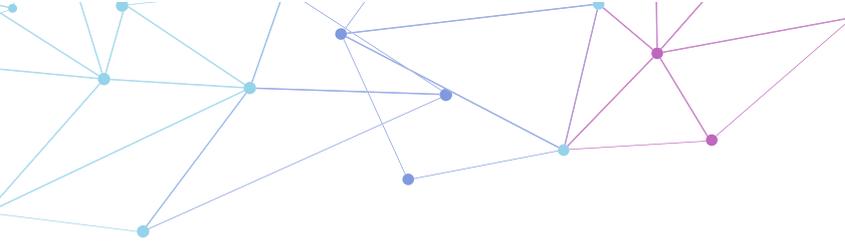
MORE ASSISTANCE SCHEMES
"More financial planning schemes or toolkits available for the public"
"Ensuring affordability (or relieving students) of school fees at the tertiary level"

MORE INTERNSHIP OPPORTUNITIES
"Creating and facilitating opportunities for meaningful internships"
"More scholarships and internship opportunities"

(I) GENERAL FUTURE PROJECTIONS

Students across all four school levels generally agreed that the future would be marked by an **'Overdependence on technology' (30)**[5] – this theme was the most frequently cited among the students' projections of the future. A secondary school respondent opined that robots would be "taking over jobs from humans" and that people would become "less sociable", since the need for face-to-face human interaction would be much reduced with technology. This negative perception of technology was prevalent among all respondents except the JC student groups. The latter could be due to the fact that the JC students had been more exposed to academic discussions about technology's impact on society during their GP classes.

Another theme that came out of the students' future projections is '**Increasing living cost' (17)**. A polytechnic student remarked that the cost of living in Singapore would increase due to the cascading effect of the "rise in property prices", coupled with the expected "increase in Singapore's total population" to 6.9 million by 2030. A JC student expected that owning a Housing and Development Board (HDB) flat and raising a family in the future would similarly be "more expensive". Worries about the increase in the cost of living were uppermost in the minds of the non-secondary students, who, being older, had more defined expectations about living in Singapore.

Noteworthy is the concern among Madrasah students that there could be '**Fewer Madrasahs' (2)** in Singapore due to an anticipated fall in demand for student enrolment. The reasons cited included the "shrinking primary school cohort", the influence of the "Western (secular) lifestyle" and pragmatic considerations among Malay/Muslim parents to have their children access "wider career opportunities" beyond the religious sector. A Madrasah respondent linked these factors to a possible decrease in religiosity among Muslim Singaporeans in the future.

(II) PERSONAL CONCERNS

Chief among the concerns of the respondents was increased competition in the workforce and the possibility of long periods of unemployment. The reasons were two-fold: '**Influx of foreigners' (51)** and '**Glut of degree holders' (27)**. The polytechnic groups were especially strident in voicing out their views about the impact of foreigners on Singapore's labour market, noting that many jobs in Singapore require "proficiency in Mandarin" as a prerequisite, benefitting new immigrants from China in particular. However, another polytechnic student reasoned that these new entrants from China and India could be regarded by employers as more competitive than locals in securing skilled employment simply because "they have the skills, and are much smarter."

The JC respondents saw the excess of degree holders in the job market as a prime threat to their own future employability, since they were taking the GCE 'A' Level route to university. They were worried that the huge number of degree holders would "intensify competition for skilled jobs" and make them "overqualified" for other jobs. A JC student opined that in the future, degree holders in Singapore would have to spend much more effort "differentiating (themselves) from others" in order to land a job, predicting that depending solely on one's degree qualification would be "insufficient" to guarantee career success.

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[5] *The figure in parentheses denotes the number of times the theme was mentioned.*

Their concerns reflected those of the general population in Singapore. Nevertheless, the JC and polytechnic respondents recognised that it is only through continuous education and skills upgrading could one stay ahead of the job competition: for instance, another JC respondent noted that "only the most skilled ones will survive." Some of the ITE students however suggested that they were willing to consider "self-employment", like setting up an online merchandise shop, to circumvent any difficulty in finding a job. This route appealed to them possibly because being an entrepreneur allows oneself to achieve a semblance of independence outside the strictures of the education system or formal employment.

(III) PERSONAL HOPES & ASPIRATIONS

A vast majority of the respondents expressed the desire to do well in school and pass their respective national examinations (including at NITEC and diploma levels) so that they could climb the education ladder and eventually land stable employment: '**Educational qualifications for career success' (67)**. This is not a surprise, considering that as current students, their immediate priority was to succeed in school. Also, this observation is evidence that our Malay/Muslim students largely accept Singapore's principle of meritocracy. For example, one secondary school respondent had the aim of earning relevant qualifications as an "aerospace engineer". Another secondary school respondent set her aims high and wanted to study at Oxford University to become a "historian". However, at times many of the other secondary and ITE respondents were not able to give concrete steps as to how they could achieve their career goals, apart from generic details like consulting their parents and teachers.

The '**Family-centred aspirations' (25)** of the respondents are noteworthy. We noticed that many of the students' material aspirations were undergird by a desire to be of benefit to their own parents and siblings, or to raise a family themselves. One ITE respondent was specific enough to say that he wanted to be able to "financially support" his parents by the time he reaches "28 years" of age. A JC student had goals to "have a house and start a family", while a polytechnic respondent wanted to get "married by 25" years old. These observations confirm the general perception of the Malay/Muslim community as one which places high importance on family ties.

Besides material aims, the respondents also reflected a more altruistic notion of wanting to be of '**Service to society' (24)**. This phenomenon reflects well on our Malay/Muslim youths, who saw themselves as members of the wider community, understanding that this meant both privilege and responsibility on their part. Although it might sound somewhat vague, a secondary school respondent wanted, in the long run, to "produce ideas that will change the world and make it a better place." Other students across the levels expressed a desire to contribute to causes like "animal welfare" and "saving the environment."
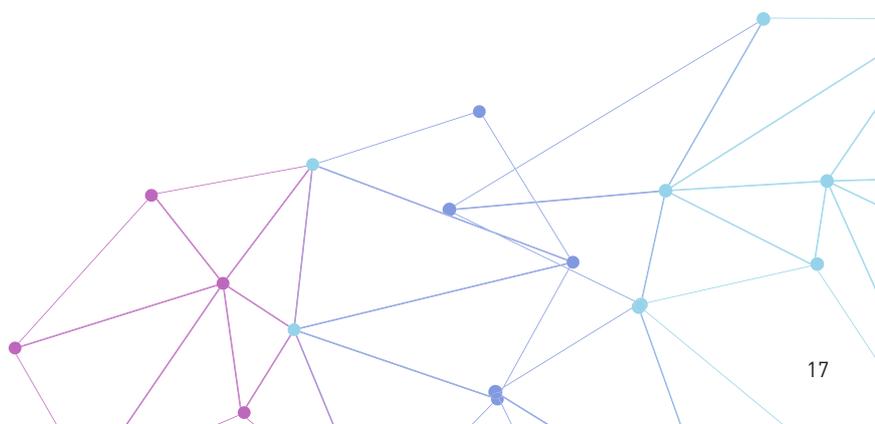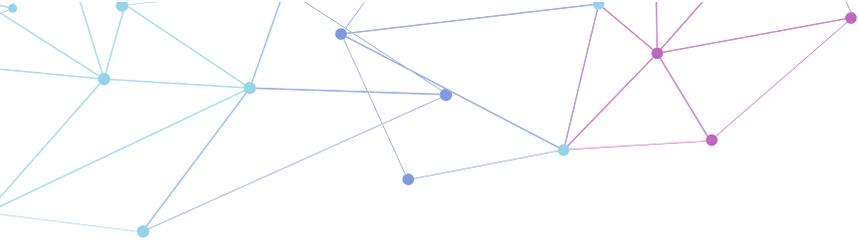
(IV) PERSONAL SOURCES OF SUPPORT

The focus group discussions revealed that many of our respondents, regardless of school level, relied on their '**Family and peers' (58)** for support. A group of secondary school respondents were almost unanimous in naming their parents and siblings as the number one sources of "advice, support and inspiration" about choosing their education and career paths. A polytechnic respondent who wanted to join teaching noted that she sought advice from her seniors who secured places at the National Institute of Education (NIE). Similarly, a group of ITE respondents indicated that they looked to their "parents and relatives" for guidance on what courses to take and the possible career trajectories.

However, while depending on one's immediate social circle and tapping on such 'strong bonds' are good for socioemotional support, more often than not, social capital theorists (Lin, 2000; Granovetter, 1985) argue that it is the "weak ties" (Granovetter, 1985) – forming relationships with contacts outside one's own social circle – that enable one to access novel information and "unique and uncontested" (Bresman, 2014) opportunities needed to succeed in school and at work. For students, this means consulting their ECG counsellors who are professionally trained to give sound advice about the various academic and career paths. Only a very small minority of the ITE and JC respondents had any contact with their ECG counsellors, while the secondary and polytechnic respondents indicated none. Furthermore, the secondary and ITE student groups seemed unaware of the various SkillsFuture initiatives. Nevertheless, these observations are somewhat attenuated by the respondents' naming of their '**Teachers' (23)** as alternative sources of advice, apart from family and peers.

A considerable number among the secondary school respondents mentioned '**Personal grit' (29)** as their source of support. The latter refers to one's own hard work and determination in achieving pre-set goals, like scoring a certain mark for an examination. For instance, one secondary school respondent admitted that "science is my weakest subject so I'll have to study hard and stay determined." Such strength of character augurs well for our Malay/Muslim students. As psychologist Angela Duckworth's research has shown, "passion and perseverance for a singularly important goal" (quoted in Scelfo, 2016) is a better predictor of success than IQ scores.

(V) SOCIETAL CHALLENGES

The issue of '**Discrimination in education and workforce' (32)** was apparent among the Madrasah and polytechnic student groups. A Madrasah student felt discriminated that she would not be able to study in a JC even if she qualifies, due to the national schools' uniform policy which disallows the wearing of the tudung (headscarf) for religious purposes. Another Madrasah student expressed interest in joining the police force or the nursing profession, but felt that the no-tudung uniform policy is discriminatory. A polytechnic respondent opined that Malay/Muslims are "being looked down upon" and face discrimination in the workforce despite holding the relevant qualifications. Similarly, quoting anecdotal references, a secondary student feared that she would face job discrimination later in life, since "people look down on us (Malay/Muslims) and think we are 'lazy.'"

Another anticipated societal challenge mentioned by the students is '**Technology breeding intensified competition' (10)**. This view was particularly prevalent among the secondary student groups. One secondary student opined that the preponderance of artificial intelligence in our daily lives would require highly-skilled human workers who are proficient in the "various programming languages." Only a few specially-trained people would qualify for the limited job openings, whereas many others with routine, mechanisable skills would have their jobs replaced by robots. Clearly, among our younger respondents, their view of the impact of technology was pessimistic.

Challenges in **'University admissions' (10)** were brought up by the polytechnic student groups. They felt that diploma holders in general face higher hurdles in gaining admission into the local publicly-funded universities, compared to GCE 'A' Level leavers. Furthermore, while the option of attending local private universities or overseas universities is open to diploma holders, these are "expensive" propositions which could be taken up only if substantial "financial support" is available. Similarly, several secondary respondents noted the intense competition for entry into local publicly-funded universities, noting that while they had lofty career ambitions, it would be "hard to get into (degree courses like) dentistry."

(VI) SOCIETAL OPPORTUNITIES

Respondents across all levels saw value in tapping **'Overseas opportunities' (29)**, be it for work or study. They regarded themselves as "global citizens" who ought to take advantage of technological advances in communication and travel, not allowing their plans to be restricted by geography. For example, an ITE respondent expressed interest in working overseas for a "design and architectural firm" in order to gain global exposure in the field. One JC student group interviewed was unanimous in wanting to work overseas, acknowledging that doing so could help increase their "intercultural skills" – something seen by them as much needed in the future economy. A few respondents from our polytechnic groups desired the less hectic pace of life in countries such as "Australia", and expressed plans to study and work there because "they have work-life balance." Others, like a respondent from our secondary groups, saw moving overseas as a matter of necessity, especially if they were unable to secure a place in a local university or find a job here: "just as foreigners have come to Singapore and availed themselves to opportunities here, so too should we migrate overseas."

Compared to the other groups, our JC respondents had a more positive view about technology's impact on society in the future, believing that there are **'Benefits to technology' (20)**. One JC group believed that while automation would result in the diminishing of many blue-collar and even some professional jobs, humans could still tap on their skills in "interpersonal communication and collaboration" and complement technology, resulting in a better quality of life for everyone. A JC student lauded technological advances in information and communications technology (ICT), recognising that the advent of the "Internet", coupled with the mass spread of "social media" such as Facebook and WhatsApp have made human interaction across the world seamless and low-cost. A minority of our younger respondents also believed that technology would bring more benefit than harm. A few secondary students raised the possibility of the Singapore Armed Forces (SAF) taking advantage of artificial intelligence, thereby reducing conscription time.
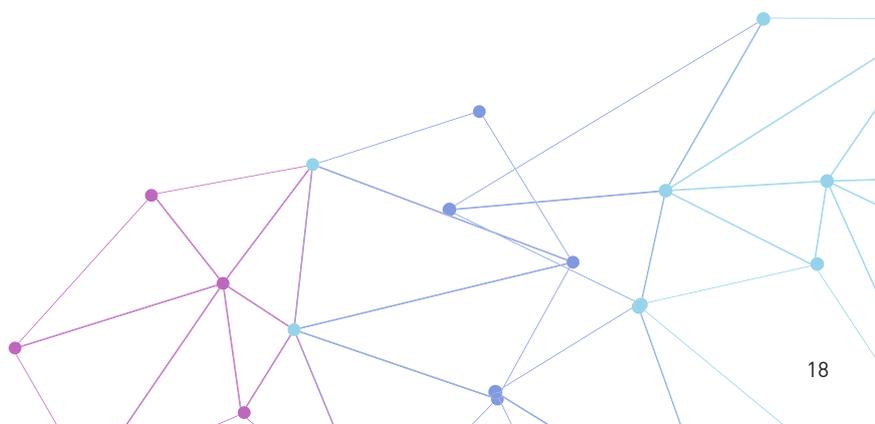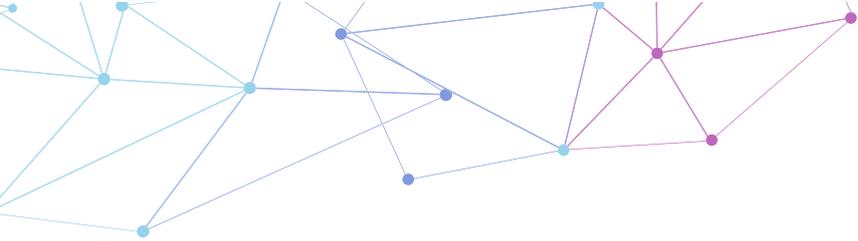
(VII) SKILLS FOR THE FUTURE

Students across all levels mentioned **'Entrepreneurial mindset' (14)** as one of the key skills they saw as necessary in order to succeed in the future economic landscape. Many of them envisioned a situation a few decades from now where the pervasive use of artificial intelligence would result in jobs being lost to robots, whereas the remaining positions would require specialised skills outside the technological proficiency of many people. Our respondents regarded entrepreneurship, including setting up an online business and freelancing, as a viable economic alternative to being an employee. For example, students in our ITE group shared their aspirations to be their own boss and establish firms dealing with "design", "fashion" and "cosmetics", among others. One JC student expressed his desire to be a social entrepreneur, as it offers independence from being an employee while giving himself the opportunity to help disadvantaged Singaporeans.

Other students indicated that they would like to acquire **'Interpersonal and language skills' (10)**. Our respondents, especially those from the JC groups, recognised that in the age of cyber-physical systems, social intelligence or the "ability to connect to others in a deep and direct way, and to sense and stimulate reactions and desired interactions" (Institute for the Future, 2011) is an asset that would give them an advantage over machines. For instance, one JC respondent said she wanted to have the "skills to bring people together" while her group mate sought to "encourage people to be more willing to listen to others who might have a different view." Our respondents from the secondary, polytechnic and JC groups also expressed a readiness, if needed, to learn foreign languages such as Chinese, French and German. They recognised that being multilingual would be an advantage in an increasingly cross-national employment landscape. On the other hand, only a minority of our respondents saw themselves taking up **'Computational skills' (6)** such as coding, programming and creating mobile applications in the future. This could be due to a personal preference for non-technological fields of study, and the lack of Malay/Muslim role models in the technological industry.

(VIII) GAPS TO BE ADDRESSED

Each student group raised different concerns which they hoped the government or community organisations like MENDAKI could help to address. Many of the secondary school respondents for instance mentioned that they would like to take part in more **'Motivational and mentoring programmes' (8)**. They felt that such programmes, with elements of positive or mindful thinking, could spur them to achieve greater success in academics, besides improving their socioemotional competencies. Our secondary school respondents also indicated that they were unaware of any ECG programme in their schools. Among the Madrasah students, our respondents hoped for equal recognition of Madrasah institutions, on par with national schools, where education and infrastructural funding is concerned. Furthermore, the Madrasah respondents suggested for more scholarships and bursaries to be given to Madrasah students pursuing religious studies at the secondary, pre-university or university level.

The JC respondents would like **'Internships and practical modules' (10)** to be included into their curriculum, noting that presently, the JC syllabus lacks any industry engagement or the imparting of practical skills such as negotiation and presentation. They felt that they were losing out in this aspect, compared to their polytechnic and ITE counterparts. Our ITE respondents also expressed the desire to have more access to internship opportunities, but this is most likely due to them being unaware of existing SkillsFuture initiatives managed by the ECG centre on their campus.

Across all groups, the students wanted to see more **'Financial assistance schemes' (21)** being offered for studies at the polytechnic and university levels. When probed further, we realised that they were unaware of existing financial help administered by various organisations, such as the MOE Bursary, the CDC/CCC Bursary, MENDAKI's Tertiary Tuition Fee Subsidy (TTFS) and Lembaga Biasiswa Kenangan Maulud's (LBKM) bursaries. When told of these schemes, the students suggested that more aggressive publicity should be undertaken so that no family would miss out on any financial help which they are eligible for.

DISCUSSION AND RECOMMENDATIONS

This exercise revealed that a considerable proportion of the Malay/Muslim secondary and ITE student respondents were unaware of SkillsFuture, compared to their JC and polytechnic counterparts. Most of the respondents – across all levels – were hesitant to approach ECG counsellors in school. Furthermore, while the students generally had positive academic and career aspirations – including some specific and well-defined goals – they were often unsure of the steps to be taken to achieve them, as recounted during our engagement sessions. What more can be done by the government, schools and community organisations to plug the gap in existing initiatives and prepare our students for the economy of the future? Listed below are four recommendations.

(1) MORE TARGETED AND FREQUENT ECG OUTREACH

Despite the growing availability of ECG resources in secondary and tertiary institutions, our students seem not to be utilising them, depriving themselves of the opportunity to make informed decisions that would influence their future career. This data echoes that of MOE's 2009 study on students' career decision-making patterns, which found that "48% of our youth made their course or career decisions without sufficient exploration" (Channel NewsAsia, 30 October 2015). Meeting up with ECG counsellors in school requires a prior appointment, and the formality of the process could be a considerable turn-off for students. Teachers have an important role to play here: being familiar faces to students, they can effectively serve as a bridge to the school's ECG office, acquainting students with what normally happens during an ECG advisory session. Attention should also be given to publicising ECG services to the parents of students, since our focus group discussions showed that many of the Malay/Muslim students relied on their parents and family for education and career advice. The idea is to get the parents to channel their children to ECG counsellors in school – those who are genuinely knowledgeable about the various courses and career paths. Over and above setting aside curriculum time for classroom ECG sessions, the school's ECG office or department itself should step up its outreach efforts to students, beyond once or twice a year. Specific to the content of the ECG programme, MOE and school authorities would do well to include industry-focused elements, and link tertiary students up with potential employers. Presently, the ECG programme for polytechnic and ITE students includes engagements and networking with industry partners under SkillsFuture – but the programme for JC students lacks this industry exposure. Perhaps, short vacation work shadowing stints or mentoring sessions with industry partners can be introduced for JC students.
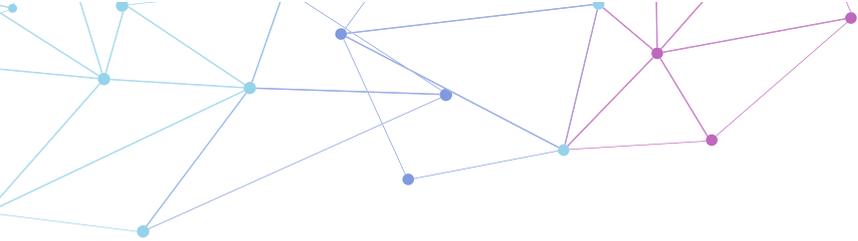
(2) PROMOTE DIGITAL LEARNING MODES

MOE, in partnership with community organisations like MENDAKI, should leverage students' familiarity with technology and promote the use of massive online open courses (MOOCs) to complement their learning in school (Brynjolfsson and McAfee, 2014). The focus group discussions indicated that the respondents embraced information technology, as can be seen from their frequent references to using mobile applications and social media. A segment of them even envisioned becoming an online entrepreneur in the future, marketing their products and skills in design, fashion and hobby merchandising, among others. These observations are not surprising: as digital natives, the students grew up at a time of expansive growth in the digital world, exposing them to computers and the Internet early on. Government and community stakeholders can ride on this wave and encourage our students to explore MOOCs, like those offered through Coursera and edX, so as to make learning more fun and effective. Martin Ford (2015) argues that MOOCs are increasingly acting as robotic tutors because they are being incorporated with "adaptive learning systems" that "offer personalised instruction and assistance" to students based on their individual progress. This means that more Malay/Muslim students can get access to personalised help for their schoolwork, on top of teacher supervision. The usage of MOOCs can be integrated into present initiatives to harness technology for classroom learning. For instance, MOE has piloted its Future Schools project in eight schools, engaging information and communications technology in teaching subjects like English and Science (Straits Times, 8 February 2016), in line with Singapore's Smart Nation vision (Smart Nation Singapore, 2016). Beyond academic learning, MOE can also tap on innovative, technology-inspired strategies to help students build career and life skills. For example, educational leaders in the US have suggested regular blogging as a way to discover personal interests and strengths (Lampinen, 2013), and leveraging video resume to distinguish oneself from other college or job applicants (Mack and Ojalvo, 2010).

(3) INCULCATE ENTREPRENEURSHIP AND 21ST CENTURY SKILLS

Digital disruption and the threat of automation will displace many workers around the world. Indeed, industries' perpetual need for innovation to stay profitable requires workers who are nimble enough to learn new skills constantly – or face redundancy. In the economy of the future, workers will need to understand that their existing competencies and even jobs may not be relevant for long. It is therefore imperative that we now prepare our children to be flexible and acquire not only the 'hard', professional skills in their chosen discipline, but also the 'soft', socioemotional skills, including having an entrepreneurial mindset, so that they can survive the fast-changing economic cycles. As mentioned earlier in this paper, skills that would give them an edge over machines – like creativity, collaboration and entrepreneurship – are just as important (Miller, 2017). With an entrepreneurial mindset, our students would be able to future-proof themselves from the vagaries of the economy and changing skillset requirements by freelancing and self-employment. In fact, many of our respondents expressed an interest in setting up their own business, but they seemed unsure of how to go about doing it. MOE, through its 21st Century Competencies framework (Ministry of Education, 2015), should therefore include entrepreneurship as a core skill, apart from focusing on socioemotional competencies. In addition, MOE should consider incorporating more systematically elements of socioemotional learning into daily subject teaching, and not limit discussions about it to certain periods in the timetable only. The 2014 MENDAKI Education Review Committee for instance recommended the implementation of the Ethics of Care (EoC) framework into the MTS curriculum (Yayasan MENDAKI, 2014). The EoC concept, a brainchild of Stanford education philosopher Nel Noddings, focuses on developing a caring relationship between the tutor and student, so as to boost the latter's socioemotional learning competencies and improve his or her academic performance. Such an emphasis is all the more pertinent, given that a high proportion of MTS students are from disadvantaged backgrounds. Successful integration of

socioemotional learning into the daily curriculum is proven to yield positive results: by attempting to "change students' mindsets" and "showing them that their intelligence can grow through deliberate work", Stanford social psychology professor Carol Dweck (quoted in Kirp, 2016) managed to improve maths grades among sixth-grade students.

(4) IGNITE STUDENTS' INTEREST IN STEM SUBJECTS

The focus group discussions revealed that while our students had a positive attitude to lifelong learning and skills acquisition, STEM subjects like coding and programming did not feature prominently in their outlook. In his 2017 National Day Rally speech, PM Lee noted that Singapore needs to build its pool of "engineers, programmers, data analysts, technicians" (Prime Minister's Office, 2017) so that it can undertake Smart Nation projects in the coming years. This means excellent career prospects for those with the relevant technological skills and qualifications. The Malay/Muslim community should seize this opportunity and plan for the long run. In this regard, government and community organisations can do more to promote an interest in STEM among Malay/Muslim students, starting from the very young. As mentioned earlier, MENDAKI is already collaborating with Google on the 'Code in the Community' scheme to introduce low-income children to programming. Perhaps MOE, or MENDAKI through its Education Trust Fund (ETF), can offer financial help to parents who wish to send their preschool or primary school children for coding and programming enrichment classes, thereby exposing the latter to STEM early on. Presently, the cost of joining these classes – with fees running in the hundreds – may be prohibitive to low-income Malay/Muslim parents.
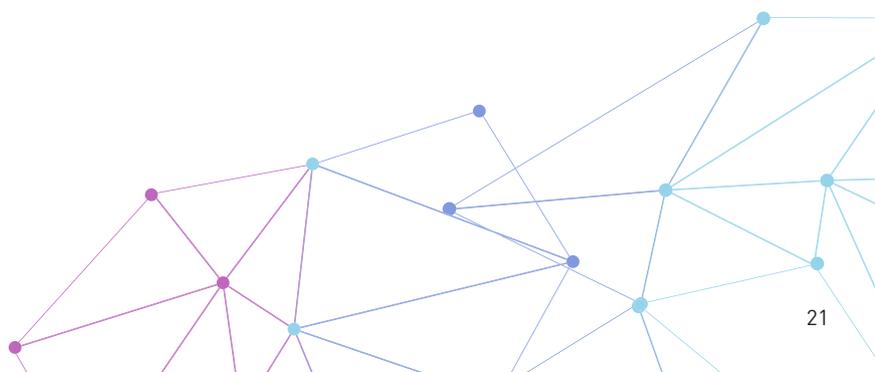
CONCLUSION

The findings of the MENDAKI Future-Ready Conversation Series offer a mixed view of the state of our Malay/Muslim students' preparedness in relation to the future skills and employment landscape. A positive takeaway from this exercise is that our youths generally have positive academic and career aspirations: this is a fertile ground from which further efforts can be undertaken to help them succeed in the future. Doing so requires a collaboration between families, the government, schools and community organisations. Based on the findings from the surveys and focus group discussions conducted, this paper has recommended some policy actions which are either an enhancement from existing ones, or newly-proposed ideas. Besides discussions on the skills aspect of the future of work, this exercise also yielded recurrent concerns about job discrimination based on race and religion. This too should be tackled by the relevant authorities, for example, by empowering the Tripartite Alliance for Fair and Progressive Employment Practices (TAFEP) with enforcement and legal powers. It is only with the joint efforts of all stakeholders can we make possible a future-proof generation of Malay/Muslim.

ANNEX A: TOP 30 WORD COUNT (NOUNS) MENTIONED BY FGD PARTICIPANTS

WORDS	BRUNCH	ELLY	MADRASAH	MTS	SECONDARY	ITE	RP	PJC	TPJC	TERTIARY	COMBINED	TOTAL WORDCOUNT
JOB	18	62	138	29	19	10	76	10	31	8	13	414
STUDENT	9	72	134	16	25	12	62	21	17	18	16	402
PEOPLE	17	30	85	17	18	3	55	3	12	10	5	255
FUTURE	5	34	79	11	17	12	45	6	10	6	12	237
WORK	9	43	77	8	9	8	34	8	20	12	3	231
STUDY	9	28	67	9	16	5	39	9	15	3	1	201
TECHNOLOGY	7	25	66	7	11	16	41	6	12	3	4	198
FAMILY	11	31	62	2	13	5	31	10	13	2	6	186
OPPORTUNITY	5	31	56	2	12	6	25	10	10	3	8	168
COURSE	9	34	50	1	2	4	16	12	20	2	0	150
NEED	10	22	46	7	3	4	24	1	13	3	5	138
EDUCATION	8	21	45	2	8	6	24	4	7	3	7	135
SCHOOL	1	24	42	7	5	5	18	2	12	7	3	126
SKILL	5	27	42	7	2	1	15	9	6	9	3	126
TIME	4	25	41	5	4	3	16	7	13	5	0	123
TEACHER	4	14	36	3	8	7	22	0	2	7	5	108

ANNEX A: TOP 30 WORD COUNT (NOUNS) MENTIONED BY FGD PARTICIPANTS (CONT'D)

WORDS	BRUNCH	ELLY	MADRASAH	MTS	SECONDARY	ITE	RP	PJC	TPJC	TERTIARY	COMBINED	TOTAL WORDCOUNT
CAREER	5	19	35	0	6	5	16	3	9	4	3	105
GROUP	3	15	34	4	5	7	19	2	5	1	7	102
LEARNING	8	20	32	1	1	2	12	5	12	1	2	96
COMPETITION	2	24	30	0	0	4	6	6	8	4	6	90
SUPPORT	7	12	30	1	9	1	18	4	6	1	1	90
SHARE	3	14	29	3	6	3	15	2	7	4	1	87
PARENT	5	15	27	3	4	0	12	2	4	5	4	81
COMMUNITY	0	23	25	0	1	1	2	8	12	3	0	75
OTHERS	4	13	24	0	4	3	11	0	3	7	3	72
BUSINESS	1	19	23	2	1	0	4	1	4	6	8	69
EXPERIENCE	1	17	23	3	1	1	6	3	11	2	1	69
WORLD	2	12	23	8	0	1	11	1	4	7	0	69
SOCIETY	1	11	22	1	8	1	11	0	6	2	3	66
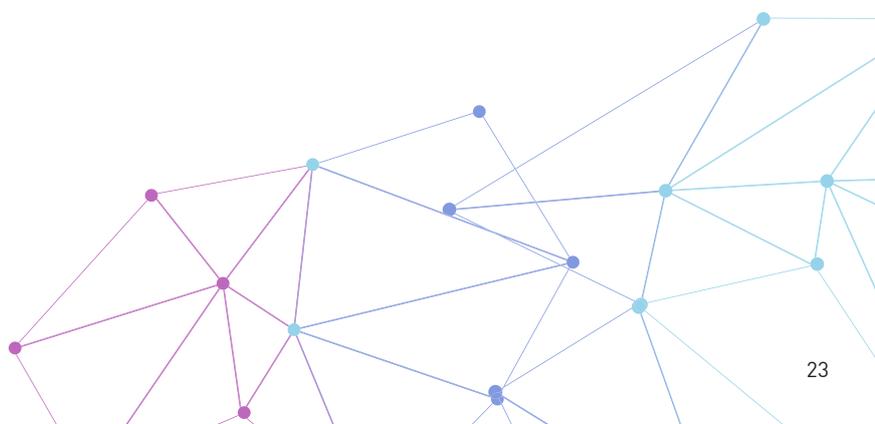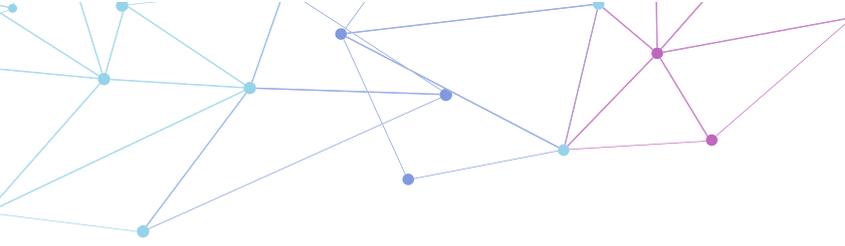
ANNEX B: SURVEY INSTRUMENT ADMINISTERED

YM FUTURE READY FOCUS GROUP DISCUSSION (FGD) CONVERSATION SERIES
ONLINE POLL ON SKILLSFUTURE AWARENESS

1. Please select your gender.

☐ 1 Male
☐ 2 Female

2. Please select your school level.

☐ 1 Secondary – Normal (Technical)
☐ 2 Secondary – Normal (Academic)
☐ 3 Secondary – Express
☐ 4 ITE – Nitec
☐ 5 ITE – Higher Nitec
☐ 6 Polytechnic
☐ 7 Junior College/Centralised Institute
☐ 8 University

3. Please state your subject combination.
_____

4. Have you heard of SkillsFuture? If your answer is 'No', please skip all questions and go straight to Question 8.

☐ 1 Yes
☐ 2 No

5. How did you hear about SkillsFuture? You may select more than one option.

☐ 1 Friends
☐ 2 Family
☐ 3 School
☐ 4 Government websites
☐ 5 News media
☐ 6 Others

6. Do you think SkillsFuture is relevant to you?

☐ 1 Yes
☐ 2 No

7. Do you think the Malay/Muslim community can benefit from SkillsFuture?

☐ 1 Yes (Please specify how _____)
☐ 2 No (Please state why_____)

Sample answers:

☐ 1 SkillsFuture can help me decide on what to study
☐ 2 SkillsFuture can help me gain new skills
☐ 3 SkillsFuture can help me make the right career choices
☐ 4 Others

8. Are you aware of the presence of Education and Career Guidance (ECG) counsellors in your school?
(They can be your teachers.)

☐ 1 Yes (Please specify how _____)
☐ 2 No (Please state why_____)

9. Have you ever approached an Education and Career Guidance (ECG) counsellor in your school for career advice?

☐ 1 Yes (Please specify how _____)
☐ 2 No (Please state why_____)
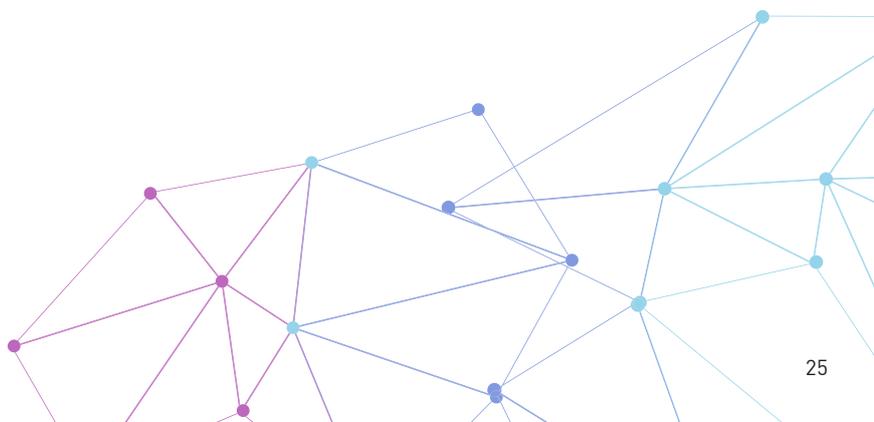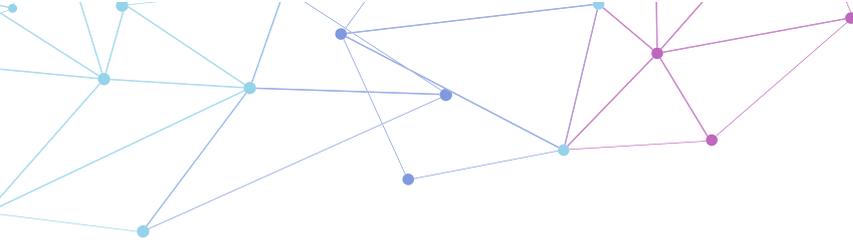
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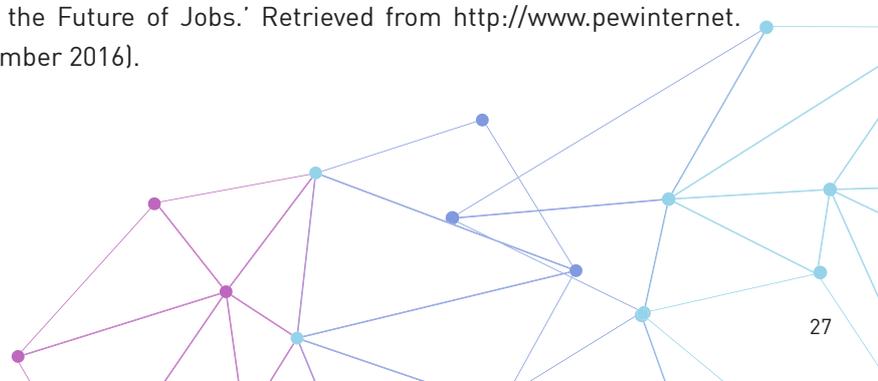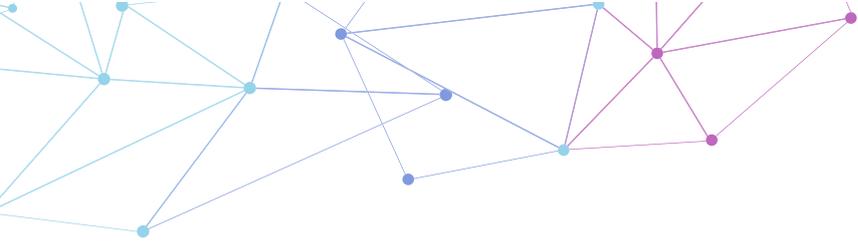
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