

# Career Decision Intervention for Malaysian Adolescents in Preparing the Capabilities of Future Leaders in the IR 4.0 Era

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## Abstract

The global Industrial Revolution 4.0 (IR 4.0) scenario has also affected the socioeconomic landscape of Malaysia. Local scholars have investigated these issues and prepared the necessary measures to moderate the effects of IR 4.0. One primary concern is the adverse challenges that adolescents face in the decision-making process concerning their future careers. Adolescence is a critical phase where multiple changes - physical, psychological, biological, and social - occur, notwithstanding the need to make decisions based on personal and career trajectories. This paper analyzes various career decision intervention strategies used to reduce the risks associated with the dilemmas among adolescents related to career decision-making, thus enhancing their self and career efficacies. Two main databases were used, SCOPUS and Google Scholar, to seek articles relevant to the current study. At the initial stage, 178 articles were identified, but in the final stage only ten articles were suitable to be adapted as the main references for developing career decision intervention in accordance with the Malaysian adolescent context. Based on the literature, progressive changes resulting from the IR 4.0 socio-economic marginalization inevitably affect the decision-making process of adolescents in terms of their future career. Optimistic suggestions are outlined in the current study, considering the new era of Industrial Revolution 4.0. These offer grounds for concerned parties to develop career decision intervention strategies that address the needs, capabilities and interests of Malaysian adolescents in the new global work environments, hence securing their future careers and well-being.

## Keywords:

Industrial Revolution; Career Decision Intervention; career decision intervention strategies or CDIS, Adolescents/Future Leaders; Malaysia.

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## Introduction

Adolescents, as established in the ILO report (2013), constitute one-quarter of the worldwide working population. On a critical note, the rate of adolescent unemployment is increasing in both developed and developing countries. Schwab (2016) stated that the Industrial Revolution

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(IR 4.0) will have a profound global impact on how individuals live, work and relate to others. As outlined by the Ministry of International Trade and Industry (2018), Malaysia is a developing country with a 32.73 million multi-racial population. It is projected to create 60% more new jobs in the era of IR 4.0. Adolescents, as future leaders, according to the Malaysia Ministry of Health (2020), constitute up to 18% or one-fifth of the population and will be affected by the instability in jobs and skills brought about by IR 4.0. An additional emphasis on digitalization or the internet of things (IoT) will influence adolescents' future career pathways. Hence, aspirations in the IR 4.0 era should include pro-active involvement through the development and arrangement in adolescents' career interventions to meet the needs, skills and interests of their future career prospects.

Notably, OECD (2004) emphasized that career education is fundamental to the efficiency of labor markets. The Malaysia Education Blueprint of 2013-2025, as part of the Malaysian Education System, further highlighted the evolution of Science, Technology, Engineering and Mathematics (STEM) education. As an alternative to STEM, Technical and Vocational Education and Training (TVET) offers the means to train, with the objective of gaining the skills and knowledge related to particular vocations. The educational aspects of the Government Transformation Program, the National Science Policy and the National Science Transformation 2050 represent success in the field of education by equipping young people with the requisite skills for competing in the worldwide employment market. These projects also develop the creativity and innovative abilities of the country's human resources, which would enable its socio-economic progress to be sustained and its living standards to be improved. These developments are crucial in society today, particularly in the transition to IR 4.0. Hence, a transformation of education not only benefits adolescents for the development of sustainability but also enables the growth of the nation's human capital.

Adolescence is evidently a crucial and vulnerable phase in an individual's development. The 2014 World Health Organization (WHO) report documented the biological, physical, psychological and social changes during adolescence that have consequences not only in adolescence but also during adulthood. Parallel to these changes, adolescents also have to make life decisions related to their future careers. Considering the extensive range of job-related opportunities, particularly when changes are ever-present, adolescents are faced with the difficult process of making career-based decisions. In 2015, a study by Van Vianen et al. revealed that the constraints and marginalization of skills and jobs could influence individual well-being. As Kenny et al. (2019) suggest, adolescents might encounter anxious and distressing emotions concerning their future access to satisfactory jobs. Such feelings may negatively influence their mental and physical health. Thus, to successfully promote access to future careers that correlate with Malaysian adolescents' needs, capabilities, interests and settings, effective career decision interventions that support these adolescents are urgently needed.

## **Methodology**

During the development of a strategy of adaptation, the first stage involved a collation and analysis of relevant empirical studies. This would allow adolescents' relationship with IR 4.0

to be established, and the effect of this on their future work prospects. Simultaneously, the “why” and “what” will be realized and understood as the essential changes needed, while analysis will be conducted of the implementation of current career decision interventions for adolescents. During this investigation, an appropriate selection was made from the literature available in two principal databases, Scopus and Google Scholar. Therefore, keywords such as ‘Industrial Revolution 4.0’ and ‘career decision intervention for adolescents’ were used in this process.

The results of the selection process were that 178 articles were identified. Following the subsequent step in the process of screening, however, just 20 remained. From these 20 articles, only 10% were related to Malaysian settings, while the remainder were generally associated. In all, ten (10) articles were determined as being appropriate for adaptation as the principal sources of reference. This selection was used to develop the career decision intervention, based on the context of adolescents in Malaysia, and the remainder of the papers offered supporting detail in the current study (refer to Table 1). The identified relationships allowed the researchers to recommend career decision intervention strategies that best fit Malaysian adolescents’ needs, abilities and interests.

Table 1: Articles selected in formulating the groundwork for a career intervention framework

Title of article	Authors	Interventions strategies suggested
Project HOPE: Evaluation of Health Science Career Education Programming for Rural Latino and European American Youth	Ali et al., (2017)	The career intervention was based on SCCT, with the activities of the intervention designed to incorporate socio-cultural factors and the five critical ingredients of career interventions (specific career information, identification of interest through RIASEC, career aspirations, community and cultural career-based resources, role model figures in specific careers) and to target specific SCCT constructs.
Situational Interest and Scientific Self-Efficacy: Influence of an Energy Science Career Intervention	Deemer & Sharma, (2019)	Besides motivation, scientific self-efficacy, situational interest and value, the ESCI also included a session with experts in the industry or sector to discuss current employment statistics and trends, as well as the technical and self-regulatory skills needed in the specific field.
The role of career adaptability and courage on life satisfaction in adolescence	Ginevra et al., (2018)	Career intervention that includes constructs to promote career adaptability, courage and life satisfaction has a significant influence on life satisfaction. In using this intervention, adolescents can create job-based targets for themselves, and manage the transition to the job environment, although there are perceptions of associated risks and obstacles.

<p>Effects of group coaching in the vocational orientation of secondary school pupils</p>	<p>Jordan et al., (2016)</p>	<p>Job-related information, strategies to promote self-reflection, and the use of group-based coaching sessions involving job-based activities were combined. This approach, being oriented around resources and focused on solutions, offers extensive benefits concerning the planning of careers, CDMSE, and the status of career decisions. Difficult vocational options often confront adolescents, so career intervention could make a contribution to the success of their career decision-making steps.</p>
<p>The Effectiveness of Industrial Work Practice in Preparing the Capabilities of Students to Enter the Business, Industrial World (DUDI) and Industrial Revolution 4.0</p>	<p>Kamdi &amp; Mulya Dewi, (2019)</p>	<p>Industrial work practice involved the use of a school-based schedule of educational courses held simultaneously in schools and workplaces. It systematically combined this dual program so that a professional level of abilities could be attained. The focus of the program was internal and external elements, which included the roles of specific industry instructors, school-based advisors, and teaching staff. The latter were engaged in standard adaptive subjects, work-related skills, satisfaction with learning, behavior connected to learning, readiness for work and student capabilities.</p>
<p>Applying the Psychology of Working Theory for Transformative Career Education</p>	<p>Kenny et al., (2019)</p>	<p>Application of psychology working theory in the design of a career model intervention to help students define their personal (personality) and social meaning and organization, as well as overcome barriers in school and future planning.</p>
<p>The change of work value endorsement among Korean adolescents and its association with socio-economic status</p>	<p>Lee et al., (2016)</p>	<p>Career intervention that emphasizes work value. Young people might enhance their extrinsic rewards and work environment when changes are made systematically based on the value of personal growth, irrespective of an adolescent's upbringing in socioeconomic terms.</p>
<p>Considerations for career intervention services in global youth workforce development (WFD): consensus across policy, research, and practice</p>	<p>Nassar et al., (2019)</p>	<p>Six key components in career intervention: (1) the ecological aspect, including holistic, systemic, and comprehensive outlooks and approaches to intervention; (2) the assessment of needs, involving the identification of suitable methods, deficits, and resources; (3) set of training curricula, involving current and potential career-focused education and WFD providers; (4) participants' curricula, covering educational and ability-based training materials directed towards every group of consumers; (5) delivery, that is, the location and method of the intervention; and (6) evaluation of the program, covering not only related data points but also source material.</p>

Making My Future Work: Evaluation of a New College and Career Readiness Curriculum (MODULE)	Perry et al., (2018)	Based on Self-Determination Theory (SDT), two models were developed [(i). single grade, or (ii). multiple grades)] to help youths transition to post-secondary education and the work-force. The constructs of MMFW modules involve academic results, engagement in school, planning for work, the fixed points controlling a career, status of vocational identity, psychological situation, being able to determine oneself, disorderly behavior, faithfulness and extent of the implementation.
Efficacy of a Group Career Construction Intervention with Early Adolescent Youth	Santilli et al., (2019)	An intervention based on constructing a career (based on a narrative and including the setting of goals), its objective was to foster resources for career adaptability that were regarded as useful in the management of transitions involving one's career. This included aspects such as future concerns, decision-making control, the will to explore, and the confidence to overcome obstacles. Furthermore, the design of this intervention was intended to offer encouragements to youths to engage in reflection concerning their future, the identification of their strong points, and the planning of projects in the future.

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## **Impacts of the Changing Socioeconomic on Work Landscape**

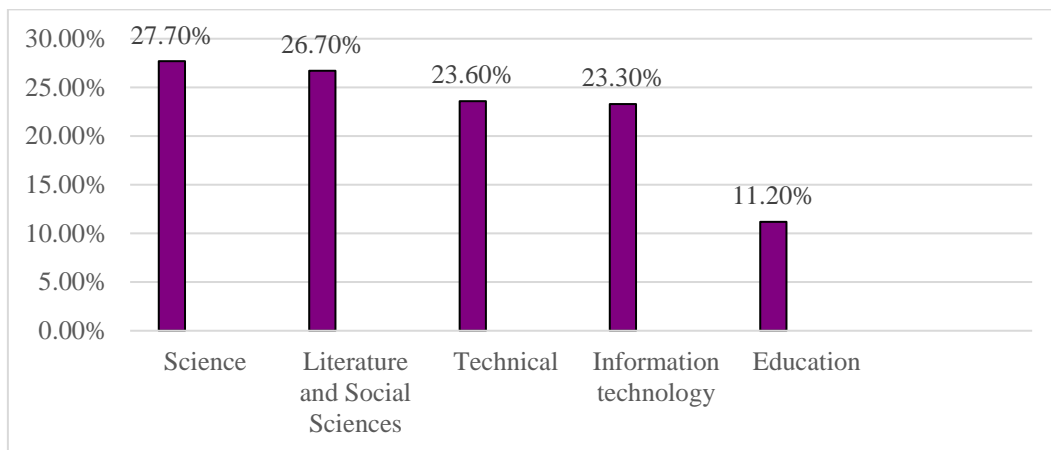
Future career trends embracing IR 4.0 will massively change the landscape of the world of work. The world is evolving into a digitalized age that involves technology like the cloud, big data, robotic engineering, printing in 3-D, and social media. These represent an unprecedented level of man-machine interaction and the growth of systems based on cyber-physics (Ooi et al, 2018) will destroy some jobs while creating new others in services and products that suit the new demands. A review of a 2019 paper by Ismail and Hassan revealed a trio of crucial themes involving technical abilities that will be of marginal interest during IR4.0: (i) the analysis, interpretation and documentation of data; (ii) the processes of comprehension and optimization; and (iii) the execution, troubleshooting and maintenance of digital tools. Hence, new skills and knowledge need to be embedded to assist adolescents in their career decision-making process and fit the needs of the marginalized future work landscape.

## **Impacts of the Changing Socioeconomic on Adolescents**

As the ILO outlined in 2015, in the worldwide youth labor market, approximately 43 percent are either without work, or employed yet remain in poverty. To be specific, around one-third of youths aged 15 to 24 are disadvantaged due to a lack of satisfactory employment opportunities. In Malaysia, the statistics are dire, with an increasing unemployment rate among graduates aged

18 and above. An economic survey conducted by the Ministry of Treasury in 2019 (see Table 2) showed the trend of the unemployment rate among graduates (with their educational background) in Malaysia. In discussing the economy of the future, the 2017 World Economic Forum stated that reliance on a singular skill set or a restricted scope of expertise would make it difficult to achieve a long-term career, since the employment market is rapidly evolving. The chaos resulting from the increase in marginalized jobs added to the challenges faced by adolescents in the decision-making processes concerning their future careers.

Table 2: Unemployment rates according to courses



Source: Department of Statistics [Economic Survey 2019 by Ministry of Treasury]

## Effectiveness of Career Decision Intervention

The development of a career requires commitment across a lifetime, and incorporates ones' interests, skills, beliefs, character, upbringing and individual context (Brown, 2002). In the adolescence phase of career decision development, one main finding that is key to this study was that previous research emphasizing career constructs is interrelated in a significant way across varied environmental settings. Ginevra et al. (2018) and Perry et al. (2018) each gave their endorsement to the way career interventions were relevant in the promotion of an adaptable and courageous attitude towards a career, which would strengthen adolescents' satisfaction with life. The extra focus on domain-specific career interventions has been proven to engage adolescents in career exploration mastery experiences as part of career decision intervention (Deemer & Sharma, 2019; Ali et al., 2017). In addition, Santilli et al. (2019) and Jordan et al. (2016) used groups in career coaching as part of career decision intervention to motivate, encourage, and support adolescents with career knowledge and skills.

Kenny et al. (2019) and Kamdi and Mulya Dewi, (2019) outlined the need for the synchronization of new systems involving career-based education or intervention, which incorporate the dimensional shifts of localized contexts and the overall marginalization. These new models would synchronize a number of roles: industrial instructors, school advisors, and adaptive normative subject teaching staff, as well as work-related skills, satisfaction with learning, approach to learning, readiness for work and adolescents' capabilities. Such an

overview would include a number of elements intended to prepare adolescents for the different and challenging employment environment, and provide them with the guidance that would further equip them for their entrance to employment. Moreover, Nassar et al. (2019) posited a set of six career intervention components: (1) the ecological perspective, (2) the assessment of needs, (3) curricula for trainers, (4) curricula for participants, (5) delivery, and (6) the evaluation of the program.

In summary, transformative career decision intervention is necessary for adolescents' personal and career development, as it will alleviate the complex challenges of the adolescence phase. Career decision intervention that is in accordance with one's societal economic position, values and culture is important to assist adolescents in the career decision-making process concerning their future career and life satisfaction, especially in the industrial revolution 4.0 era.

## **Discussion**

Due to the profound effect of industrial revolution 4.0 on the socioeconomic landscape, career development and career intervention also have been affected, so a transformation is needed to suit the demands of the new world of work. Despite the attention that certain experts have paid to this topic, minimal research has focused on the adolescent sector in the modern context. In bridging this gap, the current study offers various strategies for career decision intervention that might lay the foundations for addressing the issue in the Malaysian adolescent context. There is a correlation between these strategies for career decision intervention and the propositions of various academics, interested parties, stakeholders and policymakers.

### **Reducing the Risks Associated with Future Careers**

Ali et al. (2017) claimed that an emphasis on particular career interventions that involved work opportunities connected to the local economy might offer a number of benefits in engaging students in an exploration of their potential careers. Career decision intervention has been posited to lead to improved academic outcomes and simultaneously prevent risky behavior and negative life trajectories (Silva, Coelho, & Taveira, 2017); the feeling of fear and the intention to drop out (Perry et al., 2018); and anxiety (Santilli et al., 2019). Such intervention also minimizes the negative impact imposed by socioeconomic factors (Kenny et al., 2019). Hence, formulating an effective career decision intervention strategy may reduce the risks associated with adolescents' future career dilemmas.

### **Increasing Self-Efficacy**

One effective method of engaging students in an exploration of their potential careers is to adapt Social Cognitive Theory (SCCT), which has four self-efficacy elements: (i) accomplishing performances, (ii) learning vicariously (iii) persuasion within social groups and (iv) physiological stimulation. These are combined with particular information on careers, identifying interests, employment hopes, employment-related resources centered on the

community and culture, and examples of role models in particular work fields (Ali et al., 2017). Such an approach increases self-efficacy in adolescents' specific career or vocational tasks (Ali et al., 2017; Deemer & Sharma, 2019). Career decision intervention also uses methods of group coaching to assist in the growth of adolescents' self-efficacy in their career decision-making (Jordan et al., 2016). In addition, the implementation of career decision intervention with vulnerable adolescents in Residential Care proved to enhance their self-efficacy in terms of their future careers (Silva et al., 2017).

## **Enhancing Knowledge of the Self, Careers and the World of Work**

The rapidly changing trends of careers and the world of work have marginalized adolescents' information in preparing them for their future careers. Effective career decision intervention must be ensured, with a focus on careers, the work environment and the individual adolescent 'self' (Jordan et al., 2016). According to Santilli et al. (2019), this effectiveness has not been present in traditional classroom-based guidance intervention. A transformation of career decision intervention to include activities relating to the exploration of oneself, potential future careers and recent trends in the world of work is crucial to positively support adolescents in their career decision-making processes (Ali et al., 2017) and well-being.

## **Strengthen Capabilities and Skills**

To ensure that career decision intervention operates effectively, all adaptation plans have to be conducted in tandem with industrial requirements and the capabilities and skills of students, particularly when the influence of IR 4.0 is anticipated (Kamdi & Mulya Dewi, 2019). The inclusion and incorporation of vocational training in intervention offers opportunities to gain mastery of relevant skills. Such training also develops the capability of adolescents to generate self-efficacy (Deemer & Sharma, 2019), self-esteem and self-confidence (Kamdi & Mulya Dewi, 2019), and coping strategies (Perry et al., 2018), which all become important assets before they enter the labor market (Nassar et al., 2019; Perry et al., 2018).

## **Participation in Career Planning**

Active participation in career planning increases adolescents' awareness of their future perspectives, optimism and career decision-making engagement and self-determination (Perry et al., 2018; Santilli et al., 2019). According to the results of research by Jordan et al. (2016) the participation of adolescents in career intervention allows definitively greater progress in the planning of their careers and their status and self-efficacy in career decision-making. This process involves planning for one's career as the primary stage, one that means individuals must be aware of their interests, abilities and beliefs (Gunkel et al, 2010). The integration of career planning activities in career decision intervention is important as it increases adolescents' coping skills in overcoming career decision-making barriers.



## Competencies to Adapt, Navigate Future Career and Life Course

In the process of adolescent career decision-making, career decision intervention offers a singular and important contribution. A career decision model encompasses career components such as career adaptability (Ginevra et al., 2018; Santilli et al., 2019), self-efficacy (Ginevra et al., 2018; Jordan et al., 2016), value (Lee et al., 2016), personality (Kenny et al., 2019; Perry et al., 2018; Santilli et al., 2019), attitudes (Santilli et al., 2019), career planning (Perry et al., 2018; Santilli et al., 2019) and skills (Ali et al., 2017; Kamdi & Mulya Dewi, 2019; Nassar et al., 2019; Perry et al., 2018), along with interest (Ali et al., 2017; Deemer & Sharma, 2019). These factors will support the competencies of adolescents in navigating any future career uncertainty and adapting to the community and industry needs, and will also determine the future well-being of adolescents.

## Motivation, Encouragement and Support

People in the adolescence phase are enthusiastic about external sources (such as parents, peers, and significant others) who can persuade, motivate and encourage them in clarifying their self-identity; they also serve to improve confidence and coping skills when facing obstacles (Deemer & Sharma, 2019; Kamdi & Mulya Dewi, 2019; Kenny et al., 2019; Santilli et al., 2019). Incorporating social support, motivation and encouragement in career decision intervention positively improved the career decision-making process of adolescents in a way that empowers them. Such incorporation also enables adolescents to postulate their own ideas, build their psychological resources and promote their capabilities. The impact of these constructs can be positively seen in studies conducted by various authors (Ali et al., 2017; Deemer & Sharma, 2019; Ginevra et al., 2018; Jordan et al., 2016; Kamdi & Mulya Dewi, 2019; Kenny et al., 2019; Lee et al., 2016; Perry et al., 2018; Santilli et al., 2019).

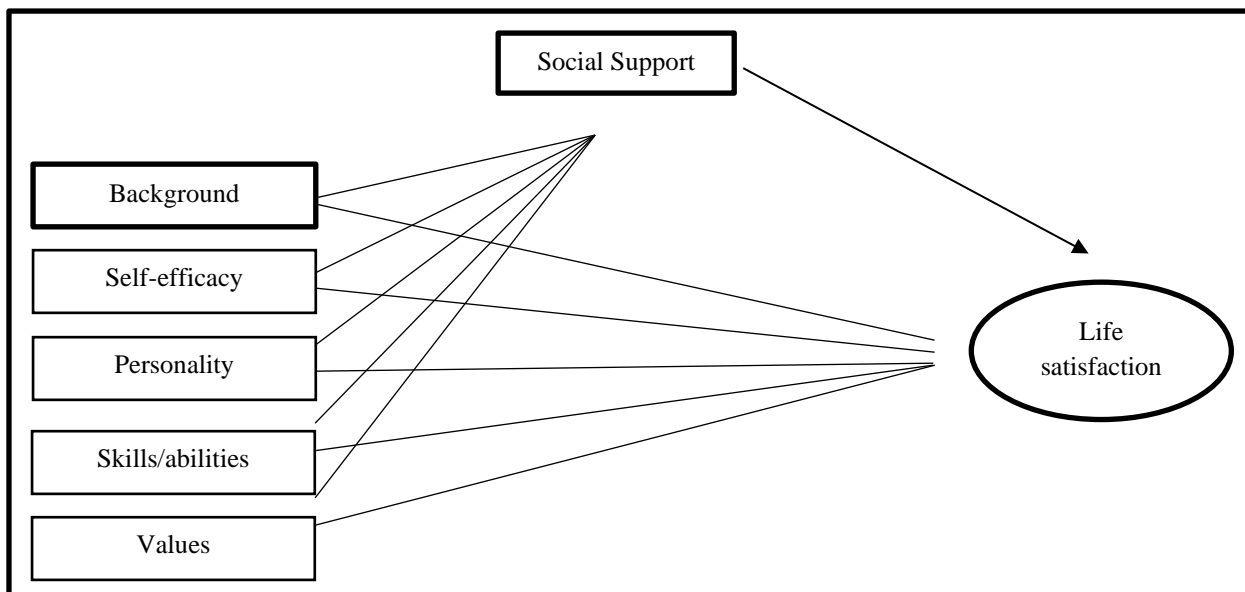
## Conclusion

Various researches have recognized strategies of career decision intervention that offer assistance to young people in the process of their career decision-making. Although the industrial revolution 4.0 has been consistently proven to change the nature of work, the situation is expected to worsen due to the COVID-19 pandemic. Companies are losing profits and increasingly unable to survive as more people lose their jobs. These situations also expose adolescents to socioeconomic instability that diminishes their career prospects. However, efforts should be made to transform career decision intervention to best prepare adolescents for their future careers by enabling them to meet and adapt to these challenges and demands. This would minimize the impacts of the new era and achieve meaningful life satisfaction.

Consequently, this current study recommends and advocates that the core focus should be on seven main issues: (i) reducing the risks associated with the career decision-making dilemma, (ii) increasing self-efficacy (iii) enhancing knowledge of oneself, careers and the world of work (iv) strengthening capabilities and skills (v) participation in career planning (vi) improving competencies to adapt to, and navigate, future careers and life courses and (vii)

ensuring motivation, encouragement and support from significant others. Such strategies for career decision intervention might form the foundation for policymakers, relevant organizations, and counselors, and allow the adaptation of strategies for career decision intervention that correspond to the national culture of socioeconomics. They might also be determined by the requirements, abilities and interests of future leaders. Career decision intervention based on the integrated contextual model offers empowerment and directions for future leaders to think and act more effectively in the challenging IR 4.0 era. The aim is not only to achieve their life satisfaction but also the sustainable development of the nation.

Figure 1: Proposed Career Decision Intervention Framework



## Highlights

1. Adolescents need to actively participate in the career decision-making process.
2. Massive marginalization of jobs resulting from the need to accommodate IR 4.0 increases the challenges and pressures.
3. Building the capabilities of adolescents fosters future leaders who are competitive in the work system.
4. Appropriate career constructs in career decision-making intervention promote the transition to future careers and life satisfaction

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