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Motivating Cambodian high school students to pursue higher education in science and health science majors: Issues and suggestions

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Abstract

Education plays an essential role in developed and developing countries, including Cambodia. All higher education (HE) majors are vital to develop a country. However, science and health science majors deserve more interest from students as majors in this field contribute to improving human well-being and scientific advances that are crucial in socioeconomic development. Motivating high school students to pursue HE in science and health science majors remains a challenge for Cambodia that needs to adapt to Industry 4.0. This article discusses issues faced by Cambodian students when choosing majors for HE degrees. It then provides some recommendations to motivate high school students to consider enrolling in the science and health science majors for HE degrees.

Keywords: Higher education; higher education majors; motivation; science and health science; Cambodia

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Introduction

Education plays a vital role in national and global development. It can develop human resources in technical skills and promote values, social development, poverty alleviation, and attitudes for sustainable economic growth (Chet, 2009). Likewise, higher education (HE) is commonly identified as crucial because it contributes to promoting socioeconomic growth (Dahles, 2017). Cambodia, one of the developing countries, has focused on enhancing HE quality because its education system still needs much improvement due to the fact that it went through prolonged civil wars in the previous decades (Ahrens & McNamara, 2013; Chet, 2009). Nevertheless, Cambodia is not the only country facing the issue of limited HE quality, as it is a global issue that needs to be addressed (Williams et al., 2016).

According to Sok and Bunry (2021), the number of higher education institutions (HEIs) in Cambodia has increased from 23 in 2000 to 97 in 2010 and 128 in 2021. Among them, about 94% of HEIs offer undergraduate programs, and only 6% offer postgraduate programs, with a total of around 250,000 enrolled students (Dahles, 2017). A report published by the Ministry of Education, Youth and Sport (MoEYS) in 2019 showed that the number of students enrolled in HE degrees decreased to 15% compared to the previous report in 2014 (MoEYS, 2019). Furthermore, the number of students enrolled in non-science and non-technology programs was much higher than in science and health science (Sok & Bunry, 2021).

Student enrollments in non-science programs like business-related majors (e.g., economics, management, accounting, finance, banking, administration, etc.) are prevalent in Cambodia, constituting up to 40% of the total enrollments. A total of 10% of the enrollments accounted for foreign languages, 7% for law, 2% for tourism, and 9% for other social sciences. In total, about 70% of the students were enrolled in social science-related degrees (Un et al., 2013; World Bank, 2012). One reason for this is that the business and language undergraduate program fees are much more affordable than science and health science programs (Sok & Bunry, 2021). However, only 30% of the enrollees chose science majors: 9% for information technology, 8% for engineering, 5% for science, 5% for health science, and 3% for agriculture. Overall, there is little interest in science and health science majors compared to social sciences,

especially business-related majors, although science and health science majors play a vital role in developing the country (Un et al., 2013; World Bank, 2012).

In 2021, a report released by MoEYS illustrated that there was a small percentage of enrollments for basic science (5%) and health science (5%) compared to the business-related subjects (42%) and other social science subjects (28%) such as foreign languages, law, tourism, and so on (MoEYS, 2021). Based on this report, most students were interested in social sciences rather than science and health science. This phenomenon can be because students have not been well-prepared to take up such advanced majors. Also, in Cambodia, the salary range of graduates with science-related majors has also not been provided appropriately compared to graduates with other majors.

To develop a country, all HE majors are crucial. However, science and health science majors arguably play the most important role because majors in these areas improve human well-being and scientific advances that benefit humankind. These majors can also provide better job opportunities with a good salary after graduation (Downey et al., 2011; Half, 2020; Walstrom et al., 2008). According to the Ministry of Health's Projection Plan 2012-2020, Cambodia required a total of 6299 nurses (primary nurses = 3508 and secondary nurses = 2791), 2954 midwives (primary midwives = 538 and secondary midwives = 2416), 867 medical doctors, and 129 specialist doctors (World Health Organization [WHO], 2015). Furthermore, to maintain the percentage of GDP growth within the range of 6-8 percent between 2018 to 2020, Cambodia needed about 35,000 engineers and 46,000 technicians (Japan International Cooperation Agency [JICA], 2016).

Nowadays, choosing the right major to study is a crucial consideration, as it enables students to become valuable human resources with solid foundational knowledge and skills that can assist in developing the human resources, economy, society, and infrastructure of Cambodia. Students' little interest in science and health science majors is still an issue that needs to be addressed to challenge and adapt to the Fourth Industrial Revolution or Industry 4.0 (Mon, 2022).

Against this background, this article aims to discuss issues regarding the selection of HE majors among Cambodian high school students and

suggestions to motivate them to select science and health science majors in HE. The article starts by looking at factors influencing students' choice of university majors. It then provides some suggestions to motivate students to choose science and health science majors when they pursue HE.

Issues influencing Cambodian high school students' choice of HE majors

In upper secondary school education, the Cambodian government allows Grade 12 students to select study majors through two tracks: social science or science (Kao & Shimizu, 2020; Sem & Hem, 2016). However, a report by MoEYS (2018) demonstrated that the majority of public schools in Cambodia had poor school infrastructure. Some schools had only a map or diagram but no computers when it came to instructional resources (MoEYS, 2018). This issue can affect the choice of major to study in HE because of the inequality of material resources and school infrastructure, which lead some students to get less or no opportunity to have experiments in science labs and explore the world of science. A recent study by Kao and Shimizu (2020) showed that some students chose a social science major because they believed social science is more manageable than a science major, given that it is easier for them to pass national examinations. In fact, some students who selected the social science majors in upper secondary schools changed their minds and applied for science and health science degrees in HE (Kao & Shimizu, 2020). This means that they may not be ready for the science degree and the national entrance examinations for health science majors (Kao & Shimizu, 2020). Some students, especially those who are unclear about their own talent and future career choice (Ly, 2021), chose their majors by relying on their network to provide better jobs based on their degree (Peou, 2017). For example, students might choose the major they were uninterested in (e.g., finance, banking, and law) due to family connections in this field and the promise of job offers in non-government or government sectors after they graduate (Peou, 2017).

Another issue can be related to the socioeconomic status of students' families, as tuition fees for science and health science-related majors tend to be higher than those of social science majors. More importantly, few scholarships for science and health science majors are available for both public and private HEIs, requiring students to pay full tuition fees and making some families unable to support their children in pursuing these costly majors (MoEYS, n.d.). Chea et

al. (2022) found that only 6% and 11% of health science and engineering respectively were tuition-waiver scholarships. However, 36% of the students were exempted from tuition fees for agricultural majors. Due to their family's financial constraints and lack of financial support, the majority of students were forced to study and work at the same time to support their tuition fee payments (Chea et al., 2022).

Suggestions to motivate Cambodian students to pursue science and health science majors

Choosing study majors for a HE degree in Cambodia is a key issue facing Cambodian students. To solve the issue, the government has developed the Education Strategic Plan 2019-2023 to improve equitable access to HE programs, which focuses on science, technology, engineering, and mathematics (STEM) majors (MoEYS, 2019). This is a roadmap for HE improvement toward internationalization, which promotes and motivates student enrolments in STEM.

Motivating students to enroll in STEM is important to promote enrollment in science and health science degree programs. Strategies or activities that promote participation in these programs include providing more scholarship opportunities, guidance on academic goals and career pathways, opportunities for exchange/internship programs in the field with various companies and universities, and conducting workshops and competition events (Chet & Un, 2019; Dy & Oladele, 2019; Harackiewicz et al., 2016; Williams et al., 2014). These are discussed below.

Offering more scholarship opportunities

The capacity to provide scholarship opportunities is recognized as the best way to promote science and health science degrees to students who have a good record in science subjects from high school (Dy & Oladele, 2019; Williams et al., 2014). More scholarships should be provided by the government, non-governmental organizations (NGOs), universities, and the private sector through competitions ranging from 50% to 100% scholarships, depending on students' abilities.

Providing academic and career planning guidance

This is important for students to understand their academic journey and navigate their career pathways, including expected requirements, benefits after graduation, and preparation for career competition for better-paying jobs (Harackiewicz et al., 2016). A clear understanding of academic and career pathways in science and health science may encourage more students to pursue their HE in this field.

Promoting exchange/internship programs with various companies and universities

Student exchange/internship is a valuable chance for high school students to meet many people from various majors and be able to seek advice from their seniors to prepare for their academic journey in science and health science majors. Such an exchange/internship provides high school students with an excellent opportunity to learn and understand things about science and health science from different perspectives. In addition, students can not only obtain information but also develop their personalities, experience different cultures, and learn new languages and skills that can be helpful for their future careers (Chet & Un, 2019; Dy & Oladele, 2019).

Conducting workshops and competitions

Conducting workshops is a way to introduce high school students to the field of science and health science, including the availability of subjects/majors in the field, duration of the study, financial expenses, career opportunities, and further education opportunities after graduation. This may help trigger high school students' interest in choosing the majors because some may lack the necessary information or advice. Furthermore, competition events allow students to engage in the field and improve their skills and interest through science and health science competitive programs. Such events would disseminate relevant information to stakeholders about students' potential in the field and provide support and opportunities for them in the future (Chet & Un, 2019; Dy & Oladele, 2019; Williams et al., 2014).

Overall, promoting student enrollment in science and health science majors is not the responsibility of MoEYS or universities alone. It is the work of all relevant stakeholders, especially the Department of Higher Education, Ministry of Health, Ministry of Economy and Finance, national and international NGOs, and the private sector, to establish motivating conditions and trigger student interest in the areas.

Conclusion

The rapid increase in enrollments in HE is a success that the Cambodian government has tried to achieve. However, there are still issues that need to be addressed, particularly the low percentage of student enrollments in science and health science majors. Science and health science degrees have been identified as important degrees, yet many students and parents tend to have little interest in these majors. This situation has resulted in an oversupply of graduates with business-related degrees that the job market is unable to absorb. In contributing to solving this issue, we need to consider increasing the number of scholarships for science and health science degrees, improving collaboration with various universities and companies for exchange/internship opportunities in the field, promoting career prospects for these majors, and conducting workshops and competition events to promote stakeholders' interest in the field of science and health science.

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