



Research article

Enhancing mental health support for international students: A digital framework for holistic well-being in higher education

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Academic Editor: Stephen Xu

Abstract: Mental health issues among students in Australia, particularly international students, remain a significant concern in higher education. We investigated the factors contributing to the ineffectiveness of current mental health services and proposed an innovative digital solution to address these persistent challenges. We introduced a formalized "Well-being Assistive Technology Framework" designed to tackle key issues students face, including social isolation, financial difficulties, and language barriers. These challenges, while exacerbated during the COVID-19 pandemic, continue to impact student well-being in the post-pandemic era. Based on this framework, a community-based mental health networking mobile application prototype was developed. The app aims to combat mental health issues by facilitating peer support, increasing service awareness, and overcoming language and cultural barriers. It provides a holistic approach to student well-being, incorporating features for quick access support, financial wellness, cultural integration, self-care, self-assessment, legal rights information, and community engagement. Future works involve user-based validation of the developed mobile app to assess its efficacy.

Keywords: mental health, well-being, assistive technology, mobile app, international students

1. Introduction

The COVID-19 pandemic has not only impacted students' mental health but also brought existing

mental health issues to the forefront, particularly among international students in Australia [1]. While the pandemic exacerbated these concerns, it is crucial to recognize that many of these challenges persist beyond the immediate context of COVID-19 [2].

International students in Australia continue to face unique pressures that affect their mental wellbeing, regardless of the pandemic's timeline. These ongoing challenges include academic and financial stress, cultural adjustment, and social isolation resulting from being far from family and support networks [1,3–5]. Although the acute phase of the pandemic has passed, these fundamental stressors remain relevant and impactful.

Researchers have consistently found that international students are less likely to seek help through available services compared to their domestic counterparts [6]. This reluctance persists despite the availability of various government and educational institution-based mental health support services. The underutilization of these resources is attributed to cultural, social, and language barriers, as discussed in previous research [7,8].

The literature has identified several themes regarding mental health issues faced by international students in Australia. These include the challenges they encounter, barriers to seeking help, and the need for digital innovation to enable social connectedness [2,7,9,10]. However, there remains a significant gap in exploring how digital technologies can be utilized to tailor support services to students' needs, particularly for culturally and linguistically diverse cohorts.

While the opportunities provided by social support services in addressing mental health issues have been extensively featured, the potential to integrate these services within a digital technology-based framework as an alternative approach to mental health support is yet to be fully explored. This calls for a reshape in the way mental health support services are delivered to students, focusing on user-centered digital solutions that promote mental wellbeing through social connectedness.

This research aims to address these gaps by examining the ongoing mental health challenges faced by international students in Australia, evaluating existing mental health support services and their shortcomings, and investigating how a digital-based framework can be used to enhance mental health support services for students. By focusing on these areas, we seek to contribute to the development of more effective, culturally sensitive, and accessible mental health support for international students in Australia, addressing issues that extend beyond the immediate impact of the COVID-19 pandemic.

The rest of this paper is structured as follows: In Section 2, we provide related works. The Well-being Assistive Technology Framework for International Students is presented in Section 3. In Section 4, we present the MindfulStudent Mobile App implemented as a proof of concept of the proposed framework. Concluding remarks are provided in Section 5.

2. Related works

The CQUniversity library database was used to find the literature selected for this review. The search terms used were: “Mental health” AND “Australia”; “Student” AND “Mental health”; “International student in Australia” AND “Mental health”; “COVID-19” AND “Mental health in Australia”; “COVID-19” AND “Mental health” AND “International students in Australia”; “Stigma” AND “Mental health”; “Mental health” AND “Technology”.

2.1. Mental health issues

Issues of mental health have always been one of the burning topics relating to human health around the world. Australia is no different, as a study showed one in 10 Australians were affected by mental health disorders in 2011/12 [11]. Direr results were reported from a National Health Survey conducted by the Australian Bureau of Statistics (ABS) in 2017/18. The results showed that during this period, 20.1% of all Australians had experienced a negative mental health event and almost half (45%) of the population reported experiencing one or more mental disorders during their lifetime. The most common symptoms reported were anxiety, depression, or feeling of depression. The major repercussion of this is the increase in suicidality. In 2017, 3,128 successful suicides were reported in Australia, a trend that is rising [12]. This has led to many studies being conducted in the field to identify causes and relevant intervention strategies.

Mental health issues have been reported in people across all population groups, including children, youths, students, women during pregnancy and after childbirth, Indigenous people, and ethnic minorities. Between June 2013 and April 2014, an estimated 560,000 (14%) young Australians between 4 to 17 years experienced a mental disorder [12]. Suicide has been highlighted as the leading cause of death among Australian youths aged between 15 and 34 years [7]. Among mothers with children aged 24 months or less, 20% were diagnosed with depression. More than half of them reported being diagnosed during the perinatal period, from the time of pregnancy to the child's first birthday. Often characterized as the "baby blues", these mothers show mild to severe symptoms of depression, with younger mothers (<25 years) from low-income households being the major victims [8,9]. This evidence shows that mental illness is more common than is usually perceived and can be an issue for anyone.

Researchers have found that socioeconomically disadvantaged groups have much higher rates of psychiatric symptoms [11]. Indigenous Australian youths are four times more likely to commit suicide compared to non-indigenous youths. Negative attitudes towards healthcare providers and government services have been identified as the primary reason for not seeking help [7]. Therefore, the mental healthcare support provided must be tailored to different population groups.

The onset of the COVID-19 pandemic has further dampened the situation with an upsurge in mental health-related issues. A high increase in symptoms of anxiety, depression, post-traumatic stress disorder, psychological distress, and stress have been reported since the start of the pandemic [10]. Common reasons for this increase have included loneliness, joblessness, fear of uncertainty, inactivity, decreased family and social support because of government-enforced self-isolation, quarantine, and social-distancing rules [10,13,14]. Lessons learned from past pandemics, such as SARS (2002-03), Swine Flu (2009), and Ebola (2013-14), have shown that mental health effects on survivors, the public, and healthcare workers lasted several years after the pandemic [13]. Post-traumatic stress disorder has been diagnosed among people with no pre-existing mental health issues [15,16]. Therefore, due to the rising number of negative mental health cases, there is a need for innovative ways to intervene and support those affected.

2.2. Mental health issues among students

A group particularly vulnerable to the mental health effects of the COVID-19 pandemic are college students. A recent study by Chegg.org [17], a US-based organisation that researches students

and educators around the world, investigated the impact of the COVID-19 pandemic on the academic performance and mental wellbeing of undergraduate students in 21 countries, including Australia. The result showed 67% of Australian students believed they suffered from negative mental health during COVID-19. This is higher than the global average of 56%. A particular area of concern is that 21% of these Australian students admitted to having suicidal thoughts and only 36% had sought help. This suggests that support services available may not be reaching, or applicable, to all student cohorts, suggesting a need to explore more effective ways to support this vulnerable population if the escalation of the problem is to be halted.

The situation of college students is similar in other developed countries. A similar study among college students in the USA showed a high number of symptoms of negative mental wellbeing. Almost half the students (48.14%) reported moderate-to-severe depression, while a further 38.48% reported moderate-to-severe anxiety. An alarming 18.04% admitted to having suicidal thoughts. Almost three-quarters (71.26%) indicated that the symptoms had increased post-COVID-19, with only 43.25% reporting that they were able to cope with the stress in the current situation [18]. Moreover, in China, 24.9% of students reported experiencing anxiety due to COVID-19 [19]. Across these studies, students across the world reported similar challenges. Common reasons provided included social distancing, family economic condition, impact on their studies, and future employment prospect [19,20]. These studies highlight a research opportunity to explore how certain cohorts, such as international students, are coping with mental stress due to the COVID-19 pandemic.

2.3. Mental health issues among international students

In major developed countries, one of the most affected yet generally neglected groups are immigrants. Unemployment, financial difficulty, and lack of access to government support has led to negative psychological outcomes among migrant students, workers, and refugees [14,21,22]. Therefore, a deeper understanding of their situation, especially post-COVID-19, is needed.

Expectation to meet their own financial and academic obligations without any government support in the face of the pandemic puts the international students in a uniquely vulnerable position. A unanimous sense of abandonment was felt by international students in Australia when they were excluded from Australian Government COVID-19 support packages and told to go home instead [1]. To date, only a handful of research has studied the psychological impact on international students in comparison to domestic university students [2]. The lack of comprehensive literature on the mental health status of international students in Australia highlights a notable gap in the literature, a gap that could undermine efforts to support this population.

2.4. Challenges faced by international students

The biggest challenge faced by international students is being away from home, which leads to feelings of loneliness. Transitioning to a new culture and environment away from family and friends leads to a sense of social isolation [2]. Post-COVID-19, Morris et al. [3] found that more than half (63%) of their participants (international students in Australia) reported being lonely. According to Orygen [23], some of the students (12%) even felt vulnerable to physical safety due to no social connections or emergency contact. The international student community identified a need for greater social connectedness, and this is worthy of further research. Thus, there is a gap that needs to be filled by identifying new ways to connect these students to society and community.

International students often struggle with finances. High tuition fees, no access to fee-help from the Australian government, and a high cost of living lead them to find jobs so that they can pay tuition fees and living expenses [1]. They may struggle with basic needs like rent and food and face the burden of unfair treatment by landlords. As per Morris et al. [3], before COVID-19, 17% of international students feared being homeless due to high rental costs in major cities like Sydney and Melbourne, and 23% even skipped meals to pay their rent. However, after COVID-19, 54% of these students faced financial hardship, with 27% not being able to pay the rent and 33% skipping meals to afford rent. Loss of jobs due to COVID-19 was the main reason for this. Berg & Farbenblum [4] found almost three-quarters (70%) of international students lost their jobs or faced a significant reduction in hours. One in seven had become homeless post-pandemic and had to find shelter at their campus, friend's places, or their car, as they were not eligible to access homeless shelters. This has ultimately affected their academic performance [4,5]. These studies show that international students are not financially sufficient to support themselves while studying in Australia as may be perceived, and this harms their mental health. Current support systems for international students in Australia require renewed consideration.

Racial abuse and workplace exploitation have long been challenges for international students [24]. According to Berg & Farbenblum [4], 25% of international students in Australia experienced racial abuse, and 9% experienced abuse at home, mostly after the pandemic. International students work more hours than allowed by their visas to pay off their expenses and they do this by working for cash. This situation has been exploited by the employer through underpayment [4]. Post-COVID-19, 14% of study participants admitted to being paid with food or shelter rather than cash. However, these students do not report this abuse as they fear getting in trouble for working extra hours and breaching their visa conditions [4,23]. Also, having worked for cash, these students are often undocumented employees and therefore not accumulating superannuation. So they cannot access their superannuation under extreme conditions [1]. This abuse and exploitation have resulted in these students fearing for their physical wellbeing which has negatively impacted their mental health. Being alone in a new country and having no one to share these experiences with can be mentally daunting.

Even after the pandemic, international students in Australia have been mostly excluded from government support. Their need for support is clearly evident according to Gallagher et al. [5], 29.4% of international students accessed financial support from their universities. This is more than double compared to domestic students (12.2%) who accessed the same university support. Nevertheless, in general, international students recognize that they receive less government support even when they are impacted at the same level as other Australians. This disparity brings into question their self-worth, from feeling unwanted and treated as “cash cows” [1]. All these challenges have led to increased anxiety and stress among the international student community. These experiences lead to feelings of hopelessness, which leads to self-isolation from the community. In turn, their academic performance, the very reason they came to Australia, is negatively impacted [1,24]. The sufficiency of available support services from both the university and the government is debatable. However, it is necessary to investigate why the situation has not improved for international students yet.

2.5. Barriers to international students seeking help

International students face several barriers that restrict them from seeking available help. International students face several challenges in their daily lives, severely affecting their mental

wellbeing. However, researchers have found that international students are less likely to seek support from available services as compared to domestic students [6]. Few researchers have identified the barriers to the wider uptake of mental health support services by international students.

One of the major obstacles for international students in accessing mental health services is the feeling of shame and social stigma [24]. Australian international students come from diverse cultural backgrounds and have differing perspectives on mental health issues. In his study to identify the social and cultural barriers to seeking mental health support, Husain [25] mentions that the social understanding in some cultures is that mental health support is needed for “crazy” people. There is a fear of social rejection, and this can affect their future career prospects. This leads to family pressure to hide any mental health issues. On the other hand, some cultures embrace and support their family members suffering from negative mental health [25]. In the research done by Orygen [23], 37% of education providers in Australia admitted to social stigma as being the major reason why international students do not seek mental health support. The fear of social stigma is also seen in domestic students, as Martin [26] found that one-third of these students felt marginalized at school and the workplace when revealing their struggles with mental health. This issue is prevalent across the globe. In the USA, 58% of students identified social stigma as a barrier to seeking help. Education providers in Australia have admitted to not having enough resources to tailor their support services to meet cultural sensitiveness [23]. Issues regarding stigma should be addressed to increase the uptake of mental health support among international students. There is a potential to examine solutions that can overcome stigma that are user-centred and culturally appropriate.

Furthermore, a lack of knowledge of available mental health support services is another major barrier. International students were found to have low awareness of the support they can access [2,6]. Orygen [23] found that 36.2% of these students did not know where to seek help while 29.7% thought the service fee would be too expensive. Most students are also unaware of their insurance coverage for mental health services. Students have admitted to rising stress levels by not knowing Australian laws and support regarding workplace exploitation and workplace injury [23]. Nevertheless, the direness of their situation was shown when students revealed their fear of breaching their student visa conditions if they asked for university and community support [24]. This can be traced back to those students who felt helpless and discouraged. New strategies need to be explored to cover the gap in service promotion and awareness level of international students.

Last, language barriers have also contributed to a lack of support-seeking behavior. In Orygen’s [23] study, 21% of participants identified poor English language fluency as a barrier to seeking help, while 13% felt their limited vocabulary capability impacted their mental health. This effect on mental health can be justified by the fact that the students felt they were victims of linguistic racism. This causes them to perceive themselves as inferior, which leads to a sense of non-belonging and impacts their self-esteem [27]. This feeling of inferiority undermines their confidence in asking for help, fearing they will not be able to properly convey their situation to the relevant support person in the English language. There is a need for more research pertaining to language barriers. Lack of mental health services provided in tailored languages may be addressed by connecting these students to other people from similar community backgrounds.

2.6. The need for digital innovation and social connectedness-based solution

Figure 1 shows the challenges faced by international students and the barriers to them seeking

mental health support. A digital platform to develop social connection and share experiences is necessary to support their mental health needs.

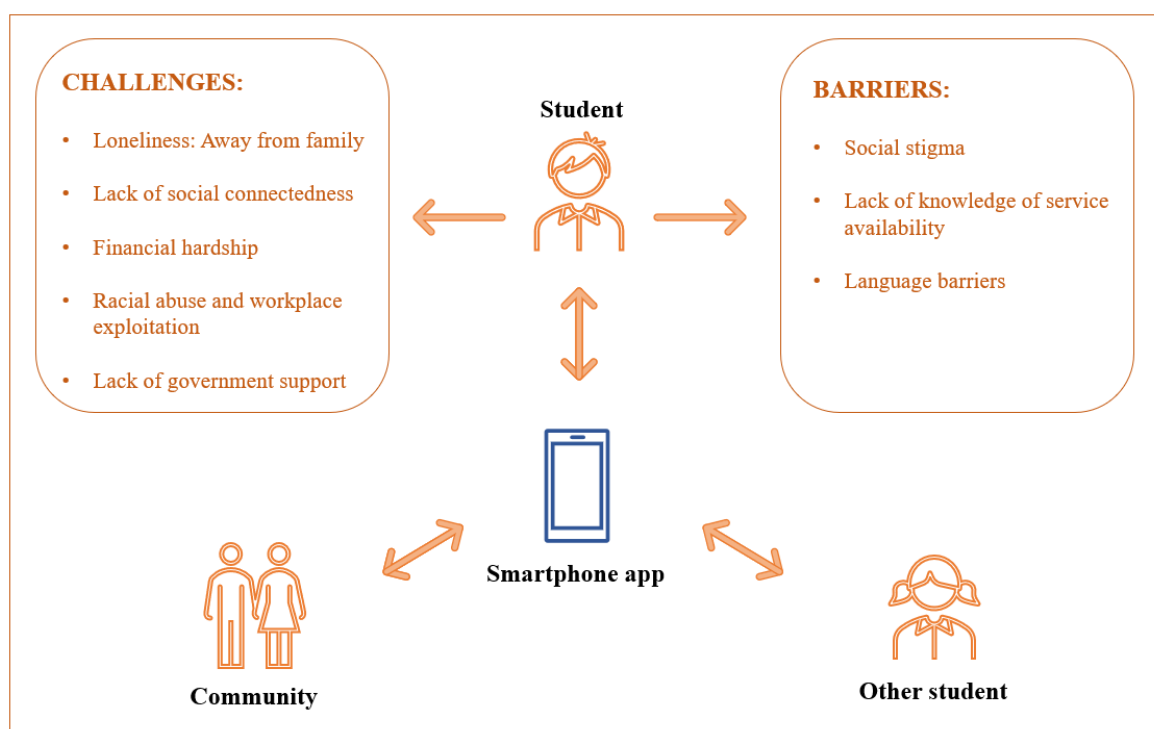


Figure 1. Digital platform to share mental health experience for international students.

In the wake of increasing mental health issues among international students due to the COVID-19 pandemic, there have been calls for changes in the way mental health support is delivered. Digital innovation in mental health services is important in the reconstruction of a post-pandemic society to meet the growing need for public health support [28]. While there are other alternative digital supports available (e.g., telehealth) provided through videoconferencing, email, telephone, or smartphone apps, it is evident that lack of social engagement continues to be the major cause of the long-lasting mental impact [29]. As Figure 1 illustrates above, in international students, a low level of social support and a sense of social withdrawal are flagged as important factors that contribute to mental health disorders [2,27]. It is important to understand their need for social connectedness to identify how this can be catered for.

Social community support and companionship are key to psychological wellbeing [30,31]. Maintaining social connectedness is a vital strategy during isolation as living without a partner and lack of family and friendship connectedness have been noted as major factors affecting mental distress [21,32,33]. Community networks can provide valuable resources to release mental pressure [34]. Students are more inclined and willing to share their mental health experiences and seek comfort with their close family and friends rather than seek professional help [18–20,35]. Family and friends have been identified as the primary source of support for most students around the world as they seek unbiased and non-judgemental understanding of their situation [18–20,26,35]. However, given the fact that international students are far away from their close family and friends, maintaining this social connectedness is difficult for them. Hence, there is a need to provide these

students with a platform to foster community connection and networking to share their mental health experiences.

2.7. Digital mental health services identified in the literature

Table 1 below analyses different digital mental health support services identified in the literature, based on the following criteria:

1. **Social Stigma:** This criterion looks into the ability of proposed digital solutions to overcome social stigma about mental health and seeking mental health support.
2. **Language Barriers:** This criterion examines whether the proposed solutions can overcome language barriers among non-English speaking students.
3. **Social Connectedness:** This criterion looks into the ability of the mental health solutions to provide social connectedness to students with people from similar background and experiences.

Each of these service types are only able to solve some of the challenges or barriers. However, almost all of the services cannot overcome the main challenge of social connectedness.

Table 1. An analysis of some of the digital mental health services reported in the literature, their benefits and shortcomings.

Proposed digital mental health service	Helps overcome social stigma?	Helps overcome language barrier?	Provides social connectedness?
Telehealth via teleconferencing [28,36,37]	No	No	No
Digital therapy programs [36,38]	No	If can be provided in native languages	No
Guided self-help intervention via online support coach [36,38]	No	If can be provided in native languages	No
Remote lifestyle intervention apps [36,37,39]	Yes	Yes	No
Wellness and meditation mobile apps [36,37,39]	Yes	If can be provided in native languages	No
Performance-based assessment apps [40]	Yes	Yes	No
Cognitive Behavioral Therapy (CBT) chatbots [38,39]	Yes	If can be provided in native languages	No
AI integrated smartphone sensors or wearable sensors [39,40]	Yes	Yes	No
Text-messaging intervention [37,41]	Yes	If can be provided in native languages	No
Traditional Social Media platforms for sharing experiences and seeking information [37]	No	Yes	Yes

Telehealth services can be as effective as face-to-face services and have become popular post-COVID-19. However, the willingness to participate can be low for international students as it does

not resolve any of the identified main challenges [28,36,37]. One-on-one digital support such as ‘digital therapy programs’ or ‘guided self-help intervention via online support coach’ has the potential for scalability by overcoming the language barrier if they can be provided in the student’s native languages. However, they lack real-world social engagement [36,38].

There are many mental health mobile apps available in the market. However, the most effective apps are those that can be personalized to individual needs and care and foster peer support [36]. ‘Remote lifestyle intervention apps’ or ‘wellness and meditation apps’ can be used to motivate an individual to have a proper diet, sleep, and exercise, all of which have a direct impact on their mental health [36,37,39]. ‘Performance-based assessment apps’ use a game-like platform to collect performance data such as errors and reaction time, amongst others. This can be useful in selecting the right treatment options [40]. These mobile apps can help overcome social stigma among international students as they can install and use the apps confidentially without needing to inform their family or friends. These apps also can solve language barrier issues if they can be made available in native languages. However, none of them enable social engagement. Also, most of these available apps are not evidence-based, which is crucial to understanding their effectiveness [37,42].

Artificial Intelligence (AI) has also been incorporated into today’s digital mental health services. ‘Cognitive Behavioural Therapy (CBT) chatbots can replicate normal conversation styles. Studies have shown such chatbots have helped decrease depression among college students within two weeks. However, this kind of technology is in its early days of development and research, and its optimal advantage has not yet been realized [38,39]. ‘AI integrated smartphone sensors or wearable sensors’ can be used to collect physiological data such as heart rate, blood pressure, galvanic skin response, and respiration. These data can help in the early detection of mental illness, allowing early intervention. This promising technology is in its early stages and is less reliable [39,40]. Again, these technologies can help solve social stigma and language barriers for international students who lack social connectedness.

Text-messaging platforms can be leveraged for behavioral health promotion and tackle digital literacy issues [37]. In fact, ‘text-messaging intervention’ has already been experimented on by international students in Australia to practice wellbeing-supporting behaviors. This support service has proved to be effective and well-received by international students [41]. This also meets our requirement to overcome social stigma and language barriers but lacks social connectedness.

Social media can be used to promote mental health services, share experiences, and seek information. Countries like China, the UK, and the US have used social media to deliver online mental health education and information. However, social media also is a hub for widespread distressing information and fake news which can increase depression and anxiety [37]. For international students, this can be a platform to foster social connectedness and resolve language barriers by connecting to people from their community. However, the fear of social stigma is likely to be immense.

3. The well-being assistive technology framework for international students

The “*The Well-being Assistive Technology Framework*” offers a holistic approach to support the mental health and overall well-being of international students through digital tools and resources. This comprehensive framework is built upon six interconnected pillars and 5 principles, each addressing a crucial aspect of student life and well-being. Figure 2 visualises the framework.

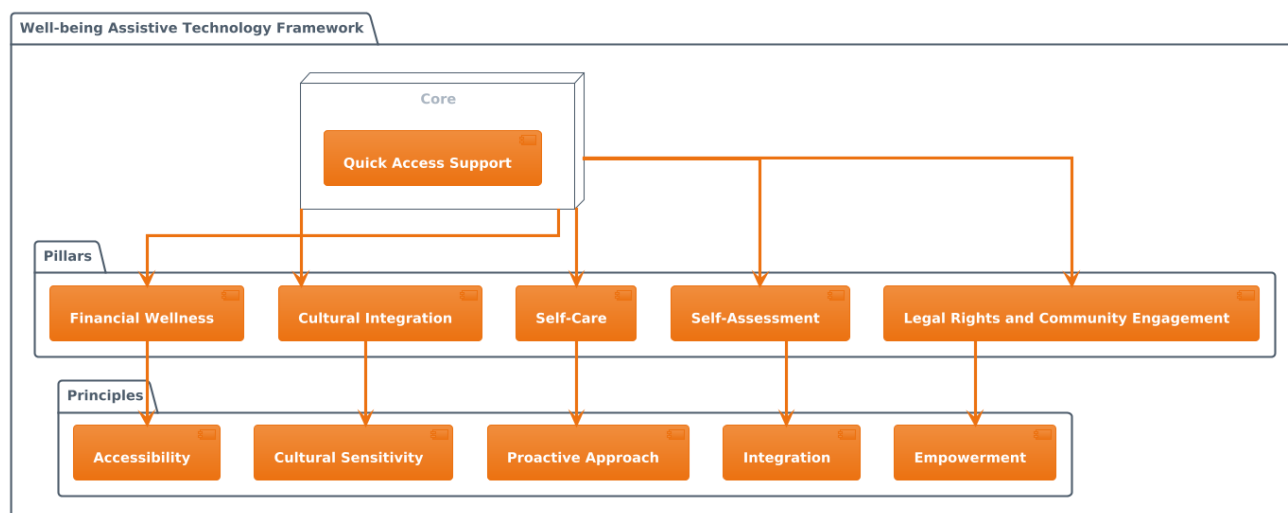


Figure 2. The developed framework for well-being technology.

At the core of the framework lies Quick Access Support, which ensures immediate access to emergency contacts, crisis support services, and university-specific resources. This pillar is designed to provide rapid assistance in urgent situations, promoting safety and timely response to mental health crises. Complementing this is the Financial Wellness pillar, which addresses the unique monetary challenges faced by international students. By offering tools and information for budgeting, scholarship searches, and expense management, this pillar aims to promote financial literacy and stability.

Cultural Integration forms another vital component of the framework, facilitating adaptation to new cultural environments through resources and community connections. This pillar strives to mitigate culture shock and isolation by fostering understanding and engagement with the host culture. Equally important is the Self-Care pillar, which provides strategies and resources for maintaining physical and mental health, encouraging students to prioritize their well-being through healthy habits and stress management techniques.

The framework also incorporates a Self-Assessment pillar, offering tools for students to evaluate their mental health, academic progress, and overall adjustment. This empowers students to recognize early signs of distress and seek appropriate support proactively. The final pillar, Legal Rights and Community Engagement, informs students about their legal rights and responsibilities in the host country while promoting community involvement and social connections to combat isolation and build robust support networks.

Underpinning these pillars are five key principles that guide the framework's implementation. Accessibility ensures all resources are easily available through a user-friendly digital platform. Cultural Sensitivity tailors support to the diverse needs of international students from various backgrounds. A Proactive Approach encourages regular engagement with well-being resources to prevent issues before they escalate. Integration connects various aspects of student life to provide comprehensive support, while Empowerment equips students with the knowledge and tools to take charge of their well-being.

By interweaving these pillars and principles, the Well-being Assistive Technology Framework develops a robust, multifaceted support system. It aims to address the complex challenges faced by

international students, promoting their mental health and overall well-being throughout their academic journey.

4. MindfulStudent mobile app

The implementation of the Well-being Assistive Technology Framework through the MindfulStudent website (Figure 3) demonstrates a thoughtful and comprehensive approach to supporting international students' mental health and overall well-being. The digital platform effectively translates the framework's six pillars into a user-friendly interface, providing easy access to crucial resources and support.



Figure 3. Well-being assistive technology framework through the MindfulStudent website.

4.1. Quick access support

The Quick Access Support section (Figure 4) exemplifies the framework's principle of accessibility. By prominently displaying emergency contact numbers, crisis support services, and university-specific resources, it ensures that students can swiftly access help in urgent situations. The clear layout and use of icons enhance usability, potentially reducing stress during critical moments.

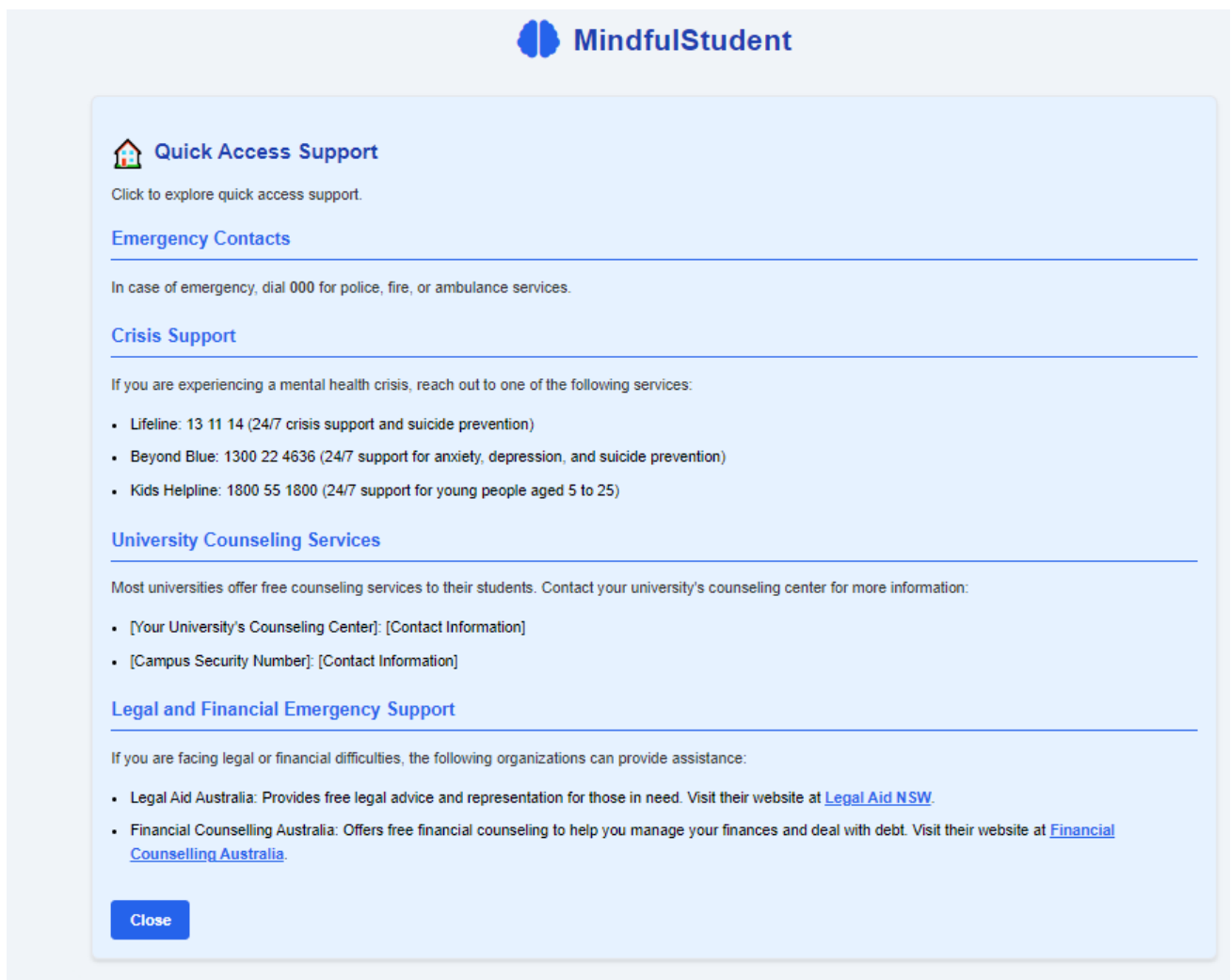
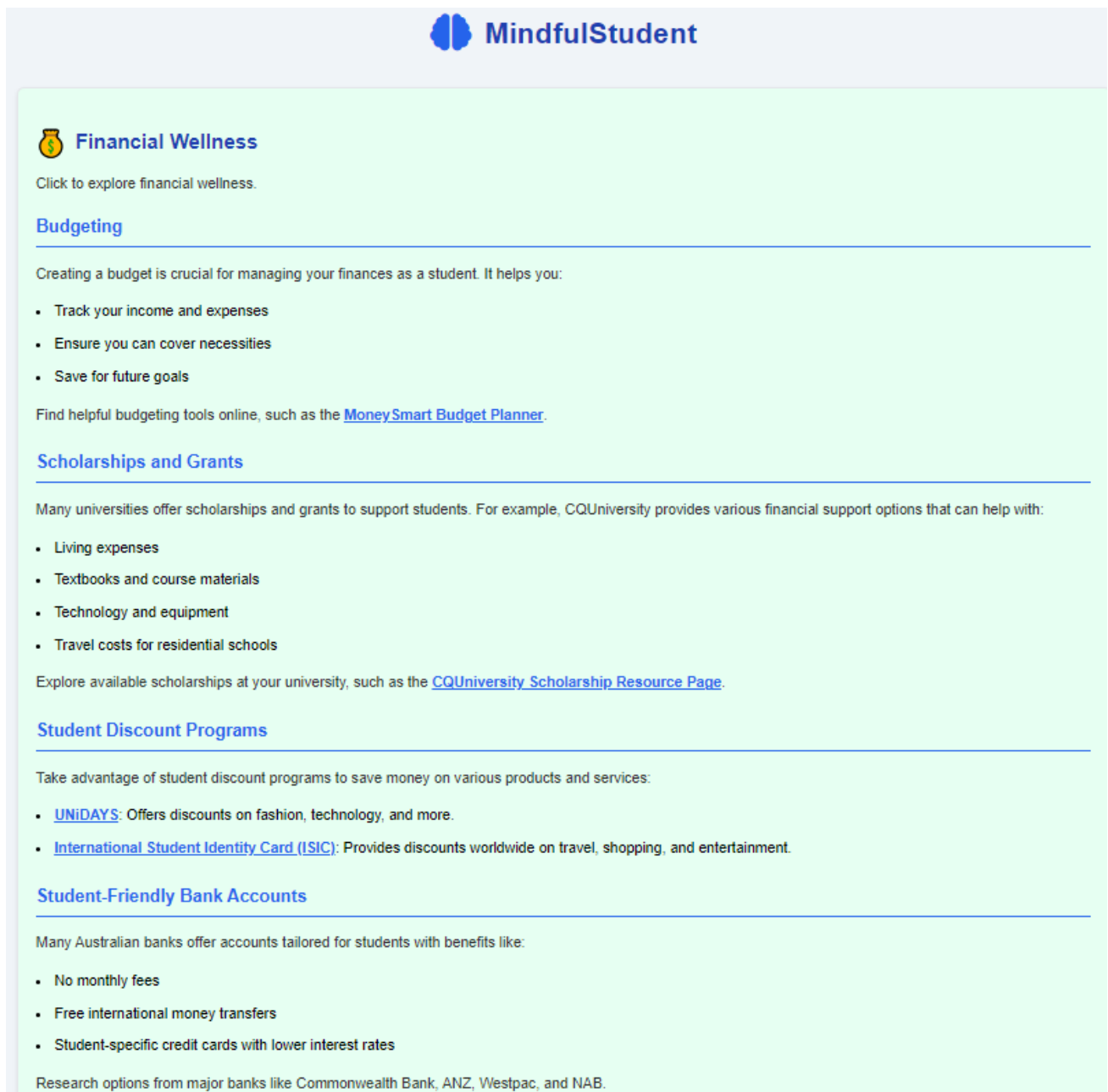




Figure 4. The quick access support of the developed framework.

4.2. Financial wellness

The Financial Wellness section (Figure 5) addresses a key stressor for international students. By offering budgeting tools, scholarship information, and financial management tips, it empowers students to take control of their finances. The inclusion of a simple budgeting calculator directly on the page is particularly useful, allowing students to quickly assess their financial situation.



 **MindfulStudent**

 **Financial Wellness**

Click to explore financial wellness.

Budgeting

Creating a budget is crucial for managing your finances as a student. It helps you:

- Track your income and expenses
- Ensure you can cover necessities
- Save for future goals

Find helpful budgeting tools online, such as the [MoneySmart Budget Planner](#).

Scholarships and Grants

Many universities offer scholarships and grants to support students. For example, CQUniversity provides various financial support options that can help with:

- Living expenses
- Textbooks and course materials
- Technology and equipment
- Travel costs for residential schools

Explore available scholarships at your university, such as the [CQUniversity Scholarship Resource Page](#).

Student Discount Programs

Take advantage of student discount programs to save money on various products and services:

- [UNiDAYS](#): Offers discounts on fashion, technology, and more.
- [International Student Identity Card \(ISIC\)](#): Provides discounts worldwide on travel, shopping, and entertainment.

Student-Friendly Bank Accounts

Many Australian banks offer accounts tailored for students with benefits like:

- No monthly fees
- Free international money transfers
- Student-specific credit cards with lower interest rates

Research options from major banks like Commonwealth Bank, ANZ, Westpac, and NAB.

Figure 5. The financial wellness of the developed framework.

Student-Friendly Bank Accounts

Many Australian banks offer accounts tailored for students with benefits like:

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- Student-specific credit cards with lower interest rates

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Expense Tracking Apps

Stay on top of your spending with these user-friendly apps:

- Pocketbook: Automatically categorizes your expenses
- Splitwise: Great for sharing expenses with roommates
- YNAB (You Need A Budget): Helps you plan your spending in advance

Seasonal Jobs







Consider seasonal work during university breaks to boost your income:

- Summer: Tourism, hospitality, fruit picking
- Winter: Ski resorts, retail during holiday sales
- Year-round: Tutoring, freelance work in your field of study

Tips for balancing seasonal work with studies:

- Plan your work schedule around your academic calendar
- Communicate with your employers about your study commitments
- Use breaks between shifts for quick study sessions
- Don't overcommit - prioritize your academic success

Simple Budgeting Guide for Students

 Track Income	 List Expenses	 Set Savings Goal
 Prioritize Spending	 Review Monthly	 Adjust as Needed

FAQ for International Students

Q: Can I work while studying in Australia?


A: Yes, most student visas allow you to work up to 40 hours per fortnight during the semester and unlimited hours during scheduled breaks.


Q: How do I file taxes in Australia as an international student?

Figure 5. Continued.

4.3. Cultural integration

The Cultural Integration section (Figure 6) effectively supports students in adapting to their new environment. The 'Australian Culture Crash Course' provides a concise overview of key cultural aspects, while the local slang dictionary with emojis adds an engaging, user-friendly touch. Recommendations for finding cultural events and activities encourage active participation in the local community, fostering a sense of belonging.





Cultural Integration

Click to explore cultural integration.

Australian Culture Crash Course

Australia is known for its values of mateship (friendship and solidarity), egalitarianism (belief in equality), and a laid-back lifestyle. Australians appreciate a good work-life balance, outdoor activities, and socializing.

Major public holidays and celebrations include:

- **Australia Day (January 26):** Celebrates the arrival of the First Fleet in 1788.
- **ANZAC Day (April 25):** Honors Australian and New Zealand Army Corps soldiers who served and died in wars.
- **Christmas (December 25):** Celebrated with barbecues, beach outings, and family gatherings.

Popular Australian foods include:

- **Meat Pies:** Savory pastries filled with minced meat.
- **Vegemite:** A salty yeast spread, often enjoyed on toast.
- **Barbecues (BBQs):** A staple of Australian culture, often featuring sausages (snags), steaks, and seafood.

Local Slang Dictionary with Emojis and Fun Elements

- **Arvo** (Afternoon) 🕒: "Let's meet this arvo for a coffee."
- **Bogan** (Unsophisticated person) 🤡: "He's a bit of a bogan but really nice."
- **Maccas** (McDonald's) 🍔: "Let's grab brekkie at Maccas."
- **Mozzie** (Mosquito) 🦟: "There are so many mozzies out tonight."
- **Servo** (Service station) 🛢️: "Stop by the servo to fill up the tank."
- **Thongs** (Flip-flops) 🩴: "Don't forget your thongs for the beach."

Recommendations on How to Find Cultural Events and Activities in Australia

Find cultural events through the following platforms:

- **Eventbrite:** Great for finding a wide range of local events.
- **Meetup:** Connects people with similar interests through group activities.
- **Time Out:** Lists cultural events, festivals, and things to do in major cities.

Check your university's event calendar for social, cultural, and educational events. Join student clubs and societies that host regular events and gatherings.

Visit local community centers for information on cultural activities and events. Participate in workshops, classes, and social groups.

Join Facebook groups and other social media communities to stay updated on local cultural events and meet new people.

Dos and Don'ts in Australia

Dos:

- Do be punctual: Australians value punctuality and being on time.
- Do respect personal space: Maintain a comfortable distance during conversations.
- Do use sunscreen when outdoors: The Australian sun can be very strong, so protect your skin.
- Do recycle and be environmentally conscious: Australians are environmentally aware and recycling is common practice.
- Do try to engage in conversations about sports: Sports like cricket and football (AFL) are popular topics.

Don'ts:


- Don't litter: Keep Australia clean and dispose of your trash properly.
- Don't boast or be overly flashy: Australians appreciate modesty and humility.
- Don't discuss politics or religion in a heated manner: These topics can be sensitive.
- Don't make fun of the accent: Be respectful of the Australian accent and dialect.
- Don't invade personal space: Avoid touching people you don't know well and respect personal boundaries.

Close

Figure 6. The cultural integration of the developed framework.

4.4. Self-care

The Self-Care section (Figure 7) offers a holistic approach to personal well-being. The inclusion of guided meditation exercises, healthy recipes on a budget, and at-home workout routines addresses physical and mental health needs. The embedded video for meditation demonstrates the platform's multimedia capabilities, enhancing engagement and accessibility.



♥


Self-Care

Click to explore self-care.

Guided Meditation and Mindfulness Exercises

Meditation can help reduce stress, improve focus, and enhance overall well-being. Practice mindfulness to stay present and manage anxiety.

- [Headspace](#)
- [Calm](#)



Healthy Recipes on a Budget

Plan your meals and shop with a list to save money. Buy seasonal produce and bulk items.

- [Budget Bytes](#)
- [Healthy Recipes on a Budget](#)

Example Recipe: **Vegetable Stir-Fry**: Simple, nutritious, and cost-effective.

At-Home Workout Routines

Use your body weight for exercises like push-ups, squats, and planks. Stay consistent with short, daily workouts.

- [Fitness Blender](#)
- [Blogilates](#)

Sample Routine: 10 push-ups, 20 squats, 30-second plank, repeat 3 times.

Sleep Hygiene Tips

Maintain a consistent sleep schedule. Create a bedtime routine to wind down. Limit screen time before bed.

- [Sleep Foundation](#)
- [Healthy Sleep Tips](#)

Close

Figure 7. The self-care of the developed framework.

4.5. Self-assessment

The Self-Assessment section (Figure 8) is crucial for empowering students to monitor their own well-being and seek appropriate support when needed. This section enables students to conduct regular check-ins on their mental health, academic progress, and overall adjustment, fostering proactive engagement with their well-being.



Figure 8. The self-assessment of the developed framework.

4.6. Legal rights and community engagement

The Legal Rights and Community Engagement section (Figure 9) informs students about their rights and connects them with the broader community. In this section, we cover important topics such as quality-assured education, workplace rights, and consumer rights, ensuring that students are well-informed and supported in their new environment.

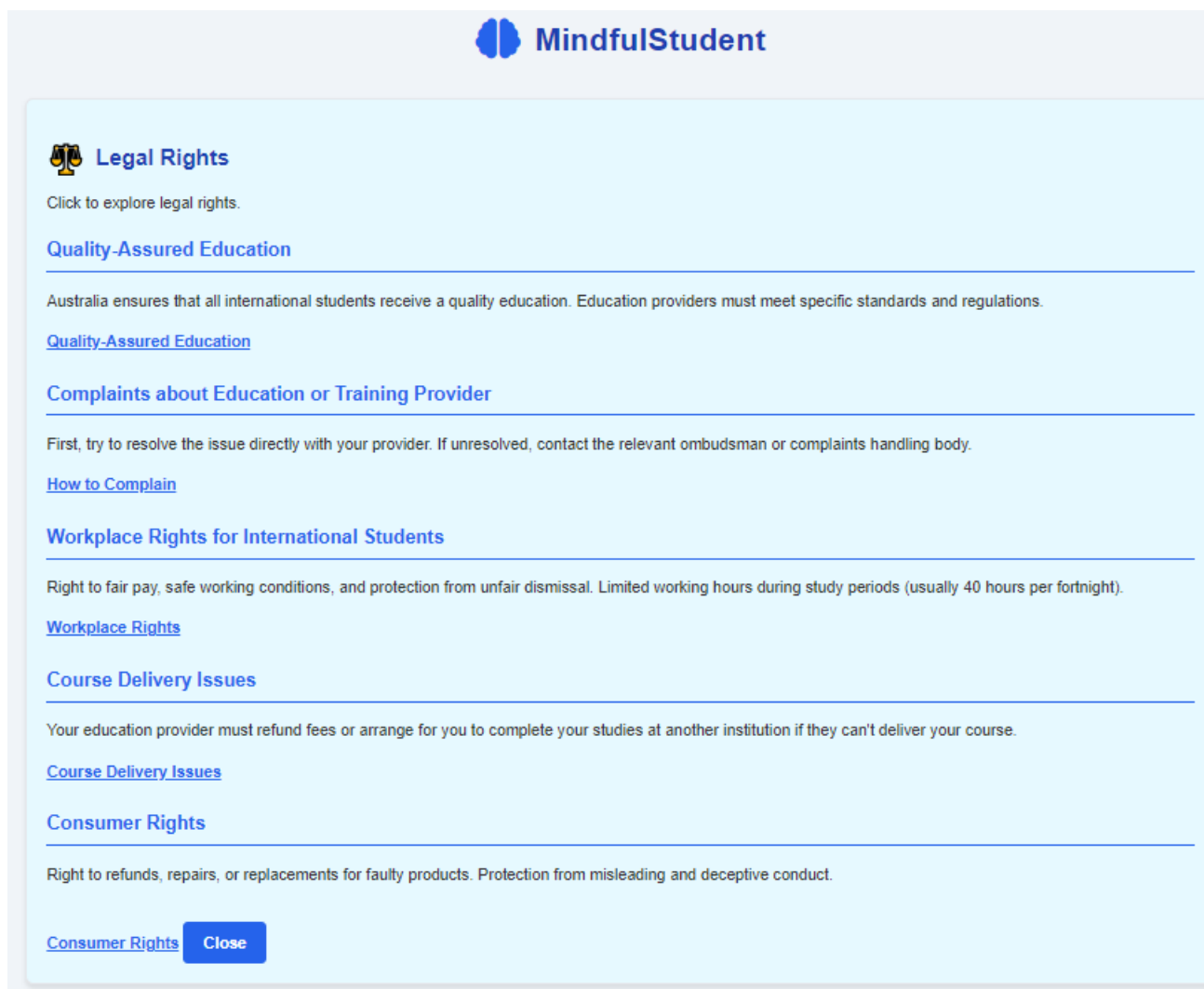


Figure 9. The legal rights and community engagement of the developed framework.

The MindfulStudent website's implementation effectively addresses the framework's principles of accessibility, cultural sensitivity, proactive approach, integration, and empowerment. The clean, intuitive design ensures easy navigation, while the use of color-coded sections and relevant icons enhances user experience.

4.7. Future enhancements

Future enhancements could include multilingual support to further improve accessibility for non-native English speakers and the integration of AI-powered chatbots for immediate, personalized assistance. Additionally, incorporating user feedback mechanisms would allow for continuous improvement of the platform.

5. Conclusions

Australian government and higher education providers already well recognize the importance and economic value of international education [13]. In today's globalized academic landscape, the mental

health and well-being of international students are critical factors for their academic success, increasing the retention rate for the completion of students' courses and their life satisfaction overall. The Well-being Assistive Technology Framework, implemented through the MindfulStudent website, offers a robust and comprehensive solution to address these needs. By providing quick access to support, financial wellness resources, cultural integration tools, self-care strategies, self-assessment options, legal rights information, and community engagement features, the platform ensures that students have a holistic support system at their fingertips.

The framework's principles of accessibility, cultural sensitivity, proactive engagement, integration, and empowerment are seamlessly embedded within the website, ensuring that students can easily navigate and utilize the resources available to them. The user-friendly interface, combined with practical tools and information, empowers students to manage their well-being proactively and effectively.

Future enhancements, such as multilingual support and AI-powered chatbots, will further increase the platform's accessibility and responsiveness, ensuring that it continues to meet the evolving needs of international students. By incorporating feedback mechanisms, the MindfulStudent website can continually improve and adapt to better serve its users.

It is important to note that a limitation of this study is the lack of a trial involving actual students. This presents an opportunity for future work to conduct user-based validation of the MindfulStudent platform. Such validation would provide valuable insights into the real-world effectiveness of the framework and allow for further refinements based on direct user feedback.

Author contributions

Mahmoud Elkhodr: Conceptualization, Methodology, Formal Analysis, Writing—original draft, Supervision, Project administration; Ergun Gide: Writing—review and editing, Supervision, Validation; Nishant Pandey: Investigation, Data curation, Writing—review and editing. All authors have read and approved the final version of the manuscript for publication.

Acknowledgments

We would like to thank the constructive feedback provided by the reviewers.

Conflict of interest

The authors declare that there are no conflicts of interest in this article.

Ethics declaration

The authors declared that the ethics committee approval was waived for the study.

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