2.3 Risks and Issues

2.3.1 Technical Issues

| **Inappropriate Software** | Choosing inappropriate software may pose significant risks and issues. For instance, for the application of artificial intelligence, choosing inappropriate models and training data could undermine the quality of chatbot and may further lead to system failures as the project expands, costing the delays of the project. In addition, outdated and unsupported technologies can limit the implementation of essential updates, jeopardizing the project’s sustainability. |
| --- | --- |
| **Unprotected Data** | Although the data used may not be highly sensitive, the web application still requires users to provide personal details during login and share information about their current career and education. It is crucial to address the risk of potential legal issues related to personal information protection, leading to misuse of data or having security breached. Ensuring compliance with data protection laws and safeguarding against security breaches is the top priority to maintain user trust and uphold legal standards. |
| **Technological Changes** | There is a risk of the software used to build the web application changing – for example, a software used to set up the backend may decide to update their software or no longer offer the service for free use. There is also the risk of the web application not being adaptable to changes in the IBM SkillsBuild website – such as if courses are removed or if the links they are accessed at change. |

2.3.2 Project Risks

| **Lack of Leadership** | Although there are project managers involved to give advice, there is no clear leader or manager within the team. This may allow for more ideas and a more flexible approach to the project,but the risk is that the project may lack direction, with the sections each team member is working on becoming disparate. Another risk is that the team will lose sight of important deadlines and steady work without clear management. |
| --- | --- |
| **Inappropriate Software Methodology** | The project is encouraged to use the Scrum software methodology. Scrum comes with the risks of having a lack of emphasis on planning – which may be compounded by the more flexible leadership structure. Scrum may also not always be the most efficient strategy – the daily reviews during sprints may not always be productive. Another risk is client and academic commitments may disrupt planned sprints. |
| **Insufficient Communication with Client** | IBM is a large technology vendor with many obligations, so contact may be limited.IBM is also involved in multiple projects, which may make remembering and interacting with different groups less likely. Although there is a company contact, Mr. John Mcnamara, that doesn’t remove the risk that lack of communication will lead to misunderstandings about the client’s expectations and requirements. |
| **Scope Creep** | Many team members have experience with web development, so it is a risk that our expectations will be increased by our perceived ability – moving the focus from required functionality to unnecessary features. The scope for the web application is ill-defined – for example, gamification can refer to many features and risks being given too much focus. |

2.3.3 Business Risks

| **Competitive Product Market** | There is already software designed to suggest courses based on user input – Brilliant is a good example of this. Although none are specifically targeted at the IBM SkillsBuild website, it does mean comparisons will be made and the target market will have expectations in terms of user experience and efficiency. There is the risk of falling short in comparison to the competition. |
| --- | --- |
| **Poor Scheduling** | There is also the risk of missing deadlines by poorly planning the timeline for work on the project or not considering the other academic and extracurricular responsibilities that team members have. |
| **Unclear Documentation** | Unclear and inconsistent documentation is likely to confuse team members and lead to the final product not being cohesive or not fitting the requirements. The client may also be misled by poor documentation, and as such the final product may not fulfill the needs of the client. |
| **Adverse Circumstances** | There is the risk of illness or unfortunate circumstances impacting the project. Adverse circumstances may affect communication within the group, scheduling and team members ability to complete the work needed. Depending on the circumstances, the impact on mental health may also affect a team member. |

2.3.4 Risk Matrix

|  | | Impact | | |
| --- | --- | --- | --- | --- |
| Low | Medium | High |
| Probability | Improbable | **Competitive Product Market** | **Inappropriate Software**  **Technological Changes**  **Unprotected Data** |  |
| Possible | **Inappropriate** **Software Methodology** | **Lack of Leadership**  **Unclear Documentation** | **Scope Creep** |
| Probable | **Adverse Circumstances** | **Poor** **Scheduling** | **Insufficient Communication with Client** |

2.3.5 Mitigation Strategies

| Priority | Impact | Probability | Risk | Mitigation Strategy |
| --- | --- | --- | --- | --- |
| Very High | High | High | Insufficient Communication with Client | As we are more likely to have a flexible schedule than the client, we can work around their schedule and plan meetings in advance. When the client is particularly busy, queries and updates can be sent by email. |
| High | High | Possible | Scope Creep | Clearly defined functional and non-functional requirements which are implemented based on priority will help prevent scope creep. In addition, using UML modeling - particularly Use Case, Class and Activity diagrams - will help clearly define the scope. |
| High | Medium | Probable | Poor Scheduling | Using the Scrum methodology, particularly the daily sprints, should encourage the team members to do at least a bit of work daily during the sprints. The sprint planning allows for both consistent work and flexibility in terms of how sprints are scheduled. Prioritizing learning how to use software in advance would also help mitigate the risk. |
| Medium | Medium | Possible | Lack of Leadership | Communication between team members is key - a Whatsapp group allows for planning logistics, a Google Docs folder to share resources, aGithub repository and a Trello board is being used to track the work done and to plan future work. The sprint planning will also allow for managing the project. |
| Medium | Medium | Possible | Unclear Documentation | Documentation should be updated regularly, in order to account for changes. Allowing for peer review in documentation and group meetings to discuss issues will mitigate the risk of poor documentation. |
| Low | Medium | Improbable | Inappropriate Software | Thorough research of the software options available and ensuring that team members start learning to use the software (if necessary) before implementation begins. Therefore, there is time to ensure the software works as promised and that team members can learn the software in the available time. |
| Low | Medium | Improbable | Technological changes | Although there are very few ways to mitigate the risk of the software used for the project changing, we can ensure that the web application integrates well with the IBM SkilsBuild by thoroughly studying the IBM SkillsBuild webpage and taking into account that more courses may be added. |
| Low | Medium | Improbable | Unprotected Data | Considering security for each of the functional and non-functional requirements, in addition to researching privacy protection policies, will mean we have done due diligence in terms of security. |
| Low | Low | Probable | Adverse Circumstances | Unfortunately the majority of adverse circumstances can’t be prevented, but scheduling consistent work throughout will help mitigate the impact. The timing of the sprints can also be adjusted based on circumstances. |
| Low | Low | Possible | Software Methodology | Scrum has many advantages, even those that will help mitigate other risks - such as the sprint planning helping with leadership. There are ways to compensate for disadvantages of Scrum - such as having the daily scrum online with a time limit. As Scrum involves iterations of sprints - adjustments can be made based on previous sprints if needed. The flexibility of Scrum means many of the risks can be mitigated. |
| Very Low | Low | Improbable | Competitive Product Market | Adjusting the requirements based on research around currently offered products which perform similar functions will help. In addition, user testing will reflect the needs of the target market. |